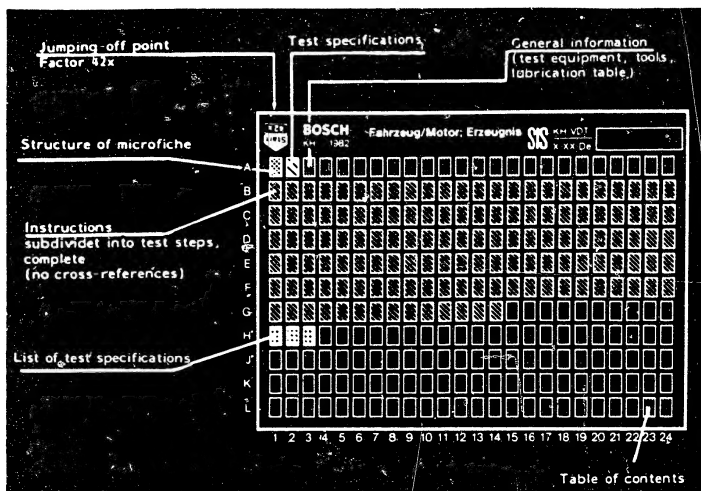


Structure of microfiche



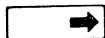
1. Read from left to right

2. Title of microfiche (appears on each coordinate)

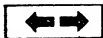
E 16	Product/assembly/test step	
	Vehicle/engine	

Coordinate

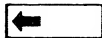
3. Limits of section



Beginning



Mid-section



End



One-page section

4. References to relevant test steps in test specifications; coordinate e.g. C6

C6

A1

Repair and testing



1. Test specifications

For test specifications see microfiche

List of test specifications W-237/1000

and microfiche

Test specifications for ignition distributors W-237/1001...

Please refer to Coordinate H1 since, owing to the vast number of test specifications, it is not possible to present them here as is otherwise customary in the SIS system.

In the list of test specifications the part number of your ignition distributor is followed by the number of the microfiche and the coordinate on which you can find the corresponding test specifications.

The new test specifications must only be used together with the new distributor test bench ZVS 50 (0 683 400 200) and distributor test adapter KDZV 7202.

Reason: The advance curves have been matched to this equipment.



2. Test equipment and tools required for repair

1 Clamping fixture	KDZV 7221
1 Puller (only for short-type distributors)	KDZV 7224
1 Round-nose pliers	Commercially available
1 Circlip pliers	Commercially available
2 Screwdrivers	Commercially available
1 Punch < 2 mm Ø	Commercially available
1 Feeler gauge 0.05...1 mm	Commercially available

2.1 Test equipment and auxiliaries required for testing

Distributor test bench ZVS 50	0 683 400 200
Distributor test adapter	KDZV 7202
Voltage stabilizer e.g. Gossen = 12 V/10 A or battery 12 V 84 Ah charged e.g.	Commercially available
Tachometer e.g. KTE 001.03	0 684 400 103
Voltmeter ETE 014.00 ($R_i \geq 50 \text{ k}\Omega/\text{V}$)	0 684 101 400
Voltmeter ETT 044 ($R_i \geq 50 \text{ k}\Omega/\text{V}$)	0 684 100 400
Voltmeter KTE 001.03 ($R_i \geq 50 \text{ k}\Omega/\text{V}$)	0 684 400 103
Voltmeter MOT 001.03 ($R_i \geq 50 \text{ k}\Omega/\text{V}$)	0 684 000 103
Voltmeter MOT 201 ($R_i \geq 50 \text{ k}\Omega/\text{V}$)	0 684 000 201
Voltmeter MOT 202 ($R_i \geq 50 \text{ k}\Omega/\text{V}$)	0 684 000 202
Multimeter (with mA measuring range)	Commercially available
Resistor 1.5 k Ω - 1 W \pm 5%	Commercially available



3. Lubricants

Plain-bearing grease
VS 14060 Ft 250g can
Special oil
01 1V13 0,5l can

Part numbers:
5 964 520 125
5 962 260 605

3.1 Lubrication table

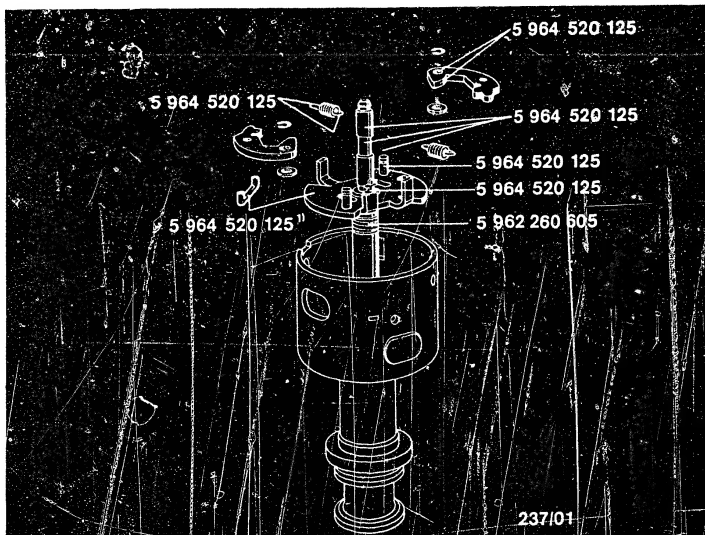
General

The following exploded views show the points which must be treated with the stated lubricants.

Pay particular attention to footnotes.

The exploded views cannot be used for the assembly of ignition distributors (incomplete).

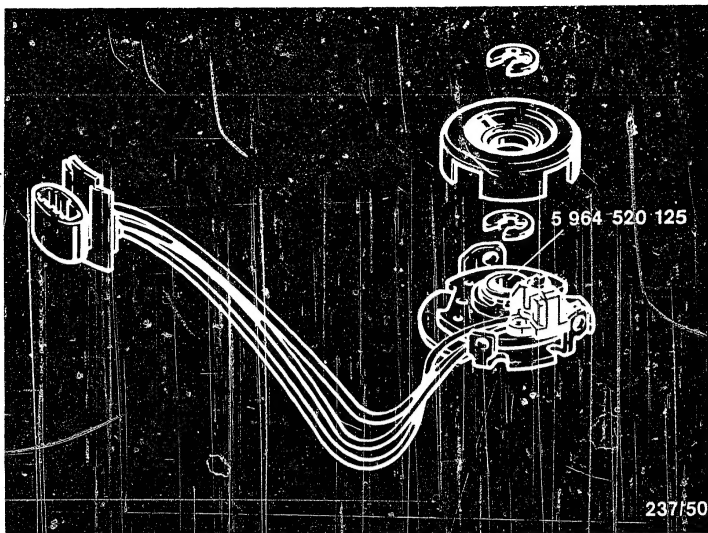




Lubrication points and lubricants on the centrifugal advance mechanism

- 1) Grease the plastic rubbing block and running surface on shaft plate





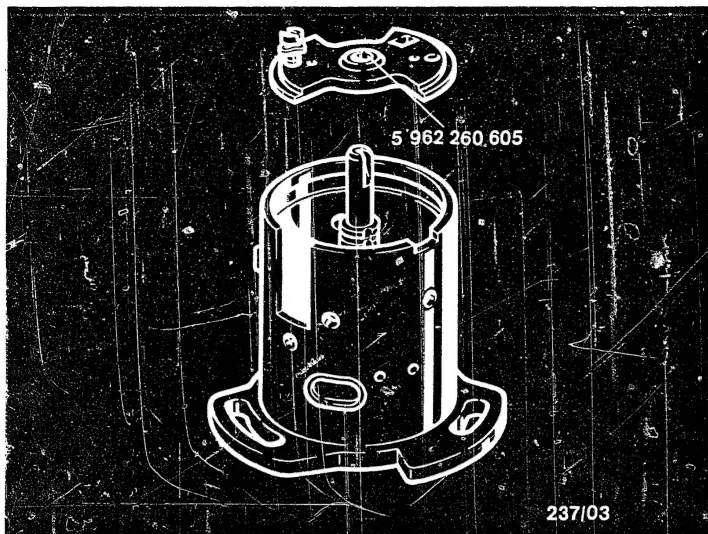
Lubrication point and lubricant on pulse generator.

A6

Lubrication table

Ignition distributors 0 237..., ZV-H





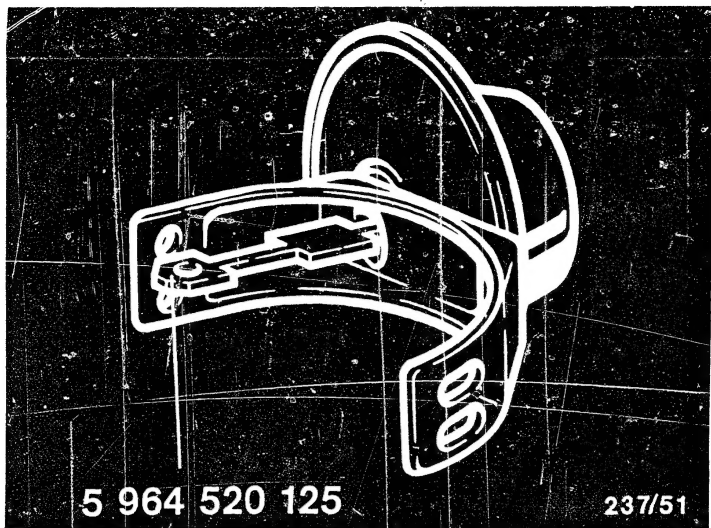
Lubrication point and lubricant on short-type ignition distributor with bearing end plate

A7

Lubrication table

Ignition distributors 0.237..., ZV-H



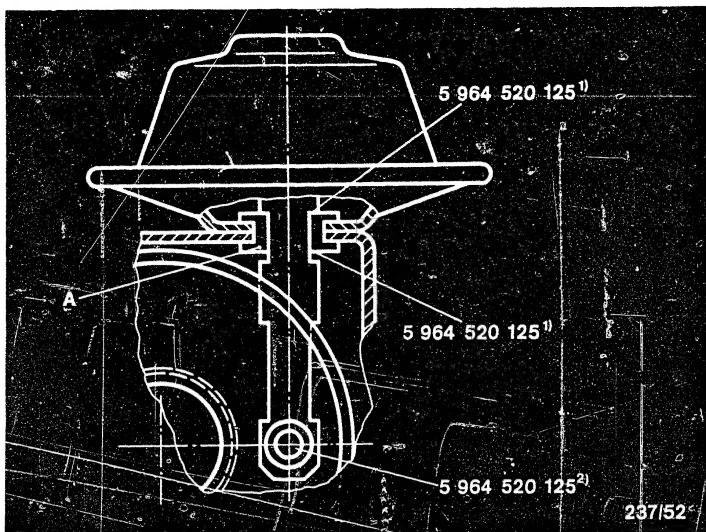


Lubrication point and lubricant on vacuum advance mechanism

A8

Lubrication table
Ignition distributors 0 237..., ZV-H

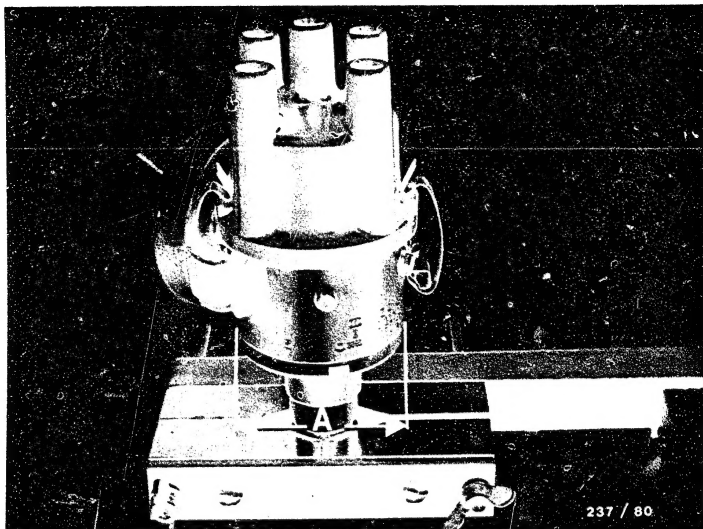




Lubrication points and lubricants on the improved vacuum advance mechanism with plastic stops (e.g. A)

- 1) Grease the stop surfaces
- 2) Grease the bore





A = Housing diameter

4. Repairing the pulse generator

4.1 Determining the size

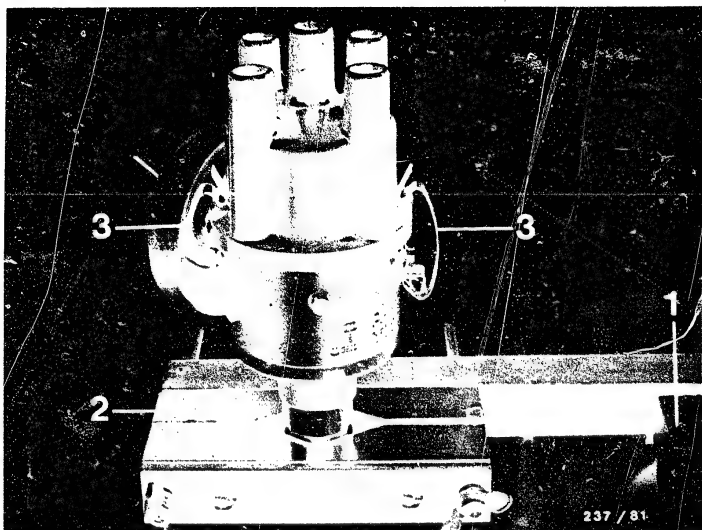
Ignition distributors come at present in 3 sizes.
The distinguishing feature is the housing diameter.
Example: 65 mm diameter (see picture).

B1

Repair, determining the size

Ignition distributors 0 237..., ZV-H





1 = Vise

2 = Clamping fixture

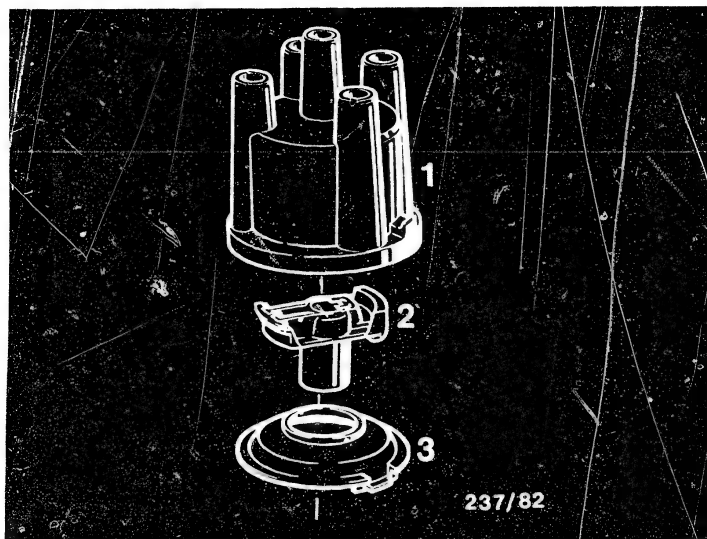
3 = Holding springs

4.2 Removing the pulse generator

Clamp the ignition distributor with clamping fixture in a vise.

Caution: If the distributor is clamped without the clamping fixture, the bearing bushing will be damaged. Release the distributor cap holding springs with a screwdriver.





- 1 = Distributor cap
- 2 = Distributor rotor
- 3 = Dust-protection cover

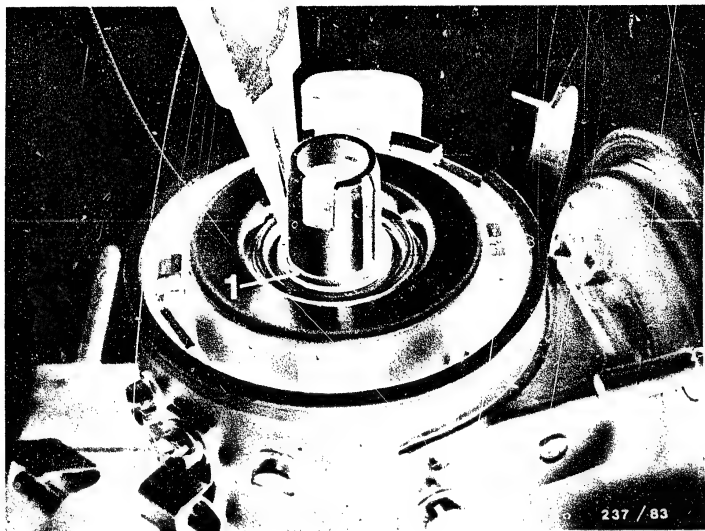
Remove the distributor cap, distributor rotor and dust-protection cover.

B3

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Retainer

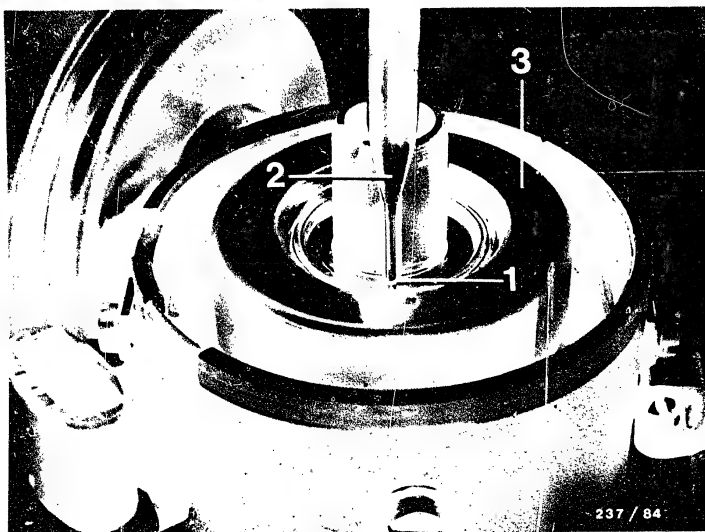
Remove the upper retainer using pliers. If there is a corrugated washer underneath it, remove it.

B4

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Straight pin
2 = Punch

3 = Trigger wheel

Using the punch, tap down the straight pin by approx. 0.5 mm (see picture).

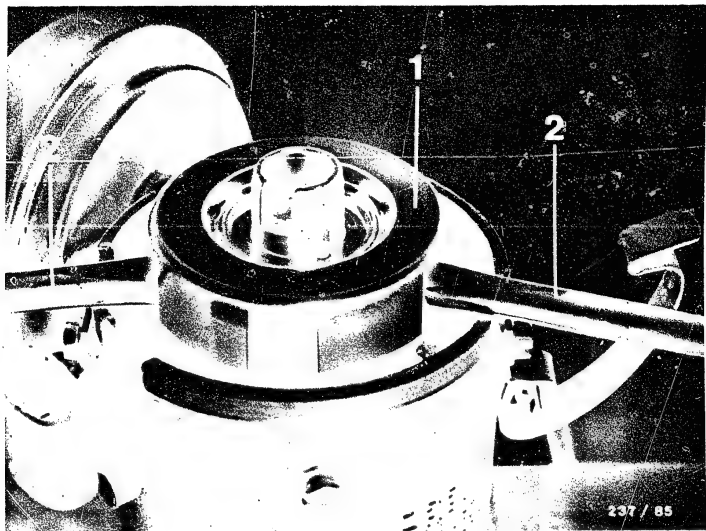
This makes it easier to remove (lever off) the trigger wheel.

B5

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Trigger wheel

2 = Screwdriver

Using 2 screwdrivers, lever off the trigger wheel (see picture).

Apply the screwdrivers to the inside of the trigger wheel (greater stability).

If stiff, tap the straight pin downward once again.

Remove the loose straight pin from the ignition distributor (pulse generator).

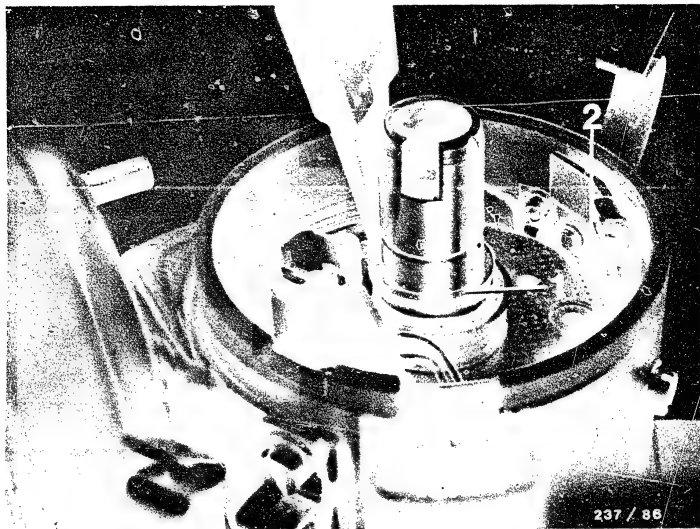
Demolish the trigger wheel and scrap.

B6

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Retainer

2 = Auxiliary magnet

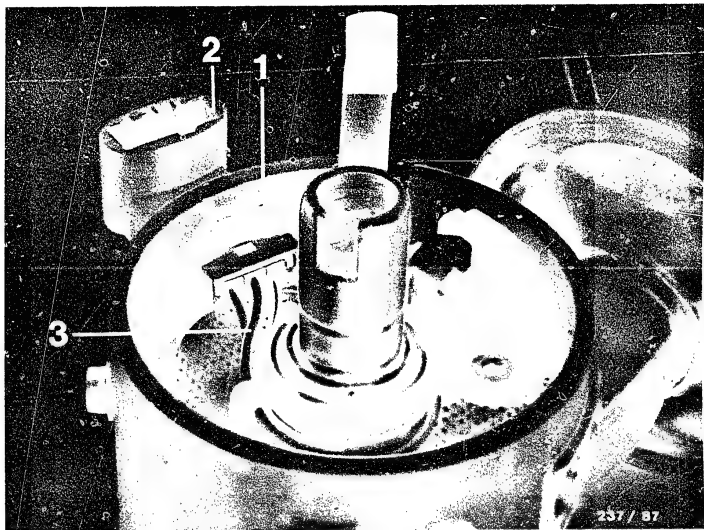
Remove the lower retainer using pliers (see picture).
If installed: Unscrew the auxiliary magnet.

B 7

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Tab washer

2 = Socket

3 = Electric lead with plug housing

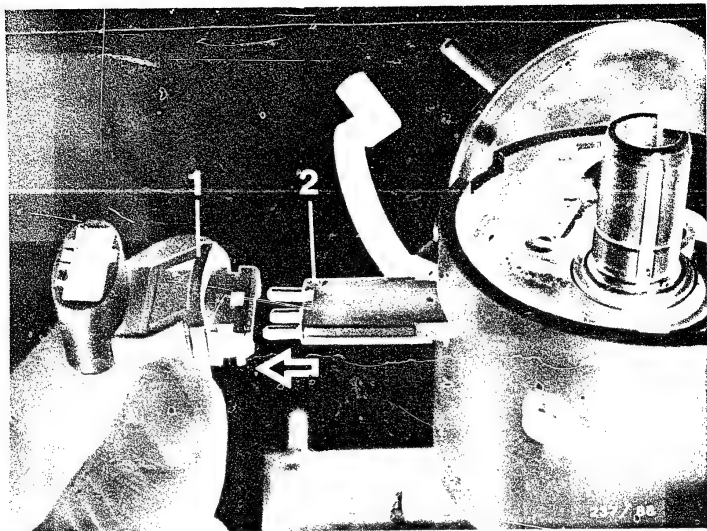
If installed: Pull the tab washer upward.

B8

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





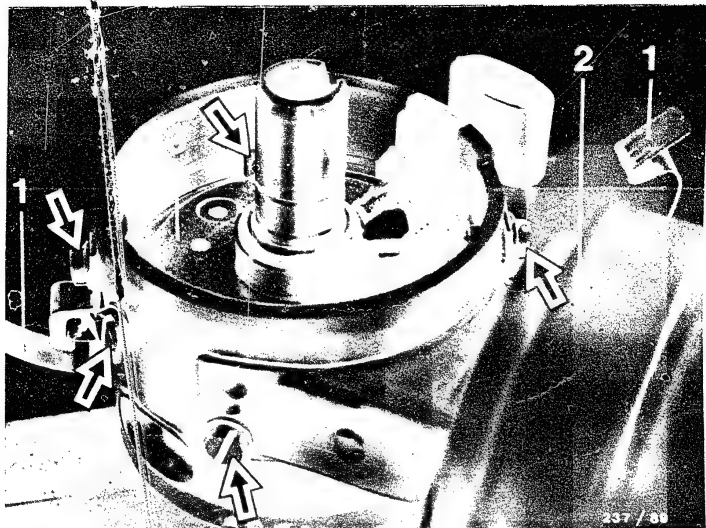
1 = Socket

2 = Electric lead with plug housing

If installed: Pull the socket out of the distributor housing.

Carefully pull the electric lead with plug housing out of the socket.





- 1 = Holding springs
- 2 = Vacuum advance mechanism
- 3 = Pulse generator

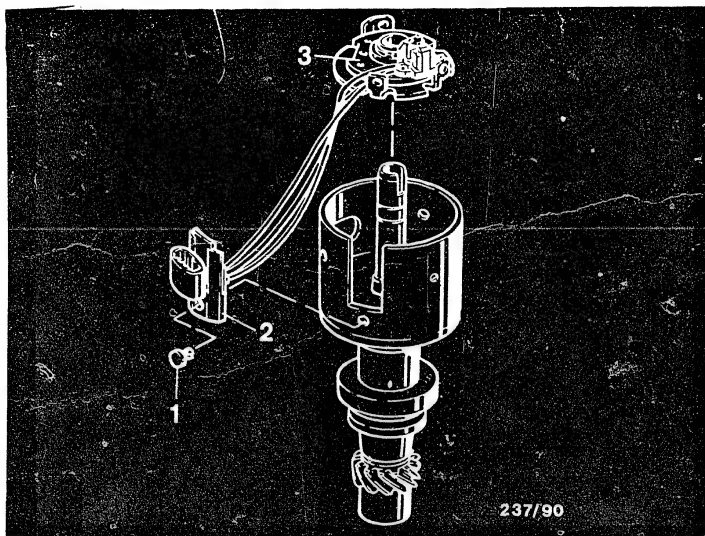
Unscrew the screws of the holding springs, vacuum advance mechanism and pulse generator (see arrows). Lower the vacuum advance mechanism downward and then pull out of the distributor housing.

B 10

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Holding pin
2 = Socket

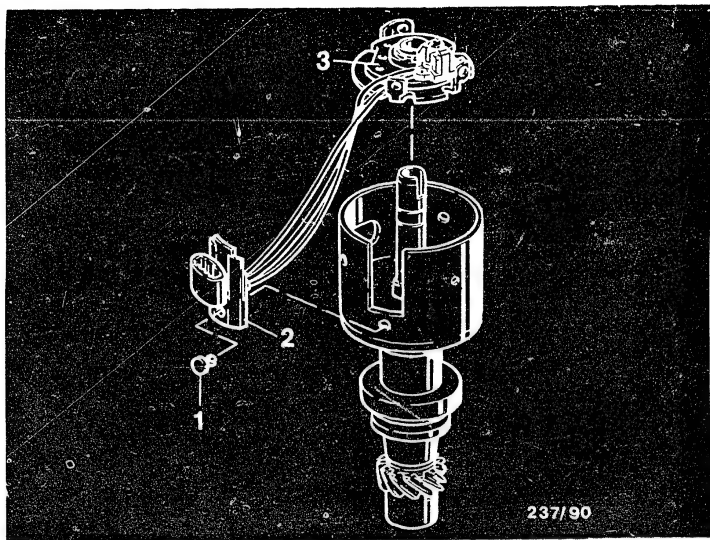
3 = Pulse generator

Pull the holding pin out of the socket.
Remove the pulse generator with socket from the distributor housing.

B 11

Removing the pulse generator
Ignition distributors 0 237..., ZV-H





1 = Holding pin
2 = Socket

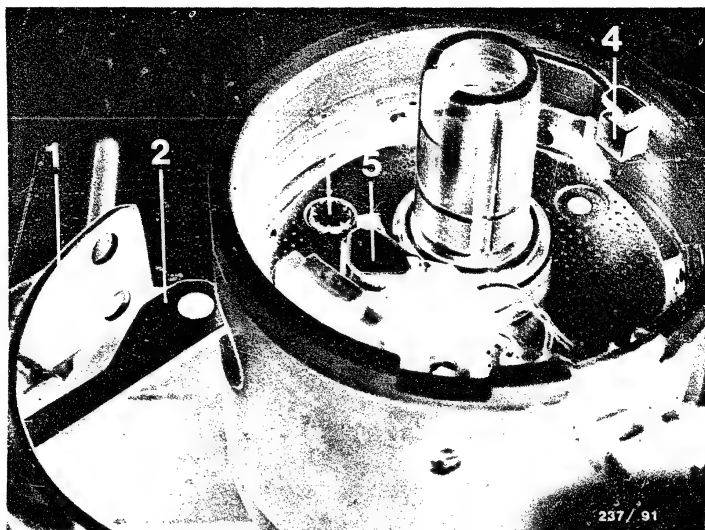
3 = Pulse generator

4.3 Installing the pulse generator

Install the new pulse generator with socket in the distributor housing.

Press the holding pin into the socket (latch in).

First of all, position the 2 pulse generator screws and tighten (common screw of pulse generator, vacuum advance mechanism and holding spring in the next operation).



1 = Vacuum advance mechanism
2 = Tie rod

3 = Bearing pin
4 = Auxiliary magnet
5 = Magnetic pickup assembly

Turn the magnetic pickup assembly as far as it will go against the direction of rotation of the distributor and hold in that position.

Introduce the vacuum advance mechanism into the distributor housing and hook the tie rod into the bearing pin of the pulse generator.

While loosely installed, move the vacuum advance mechanism to and fro and check whether the magnetic pickup assembly moves.

Position the screws of the vacuum advance mechanism and holding springs and tighten.

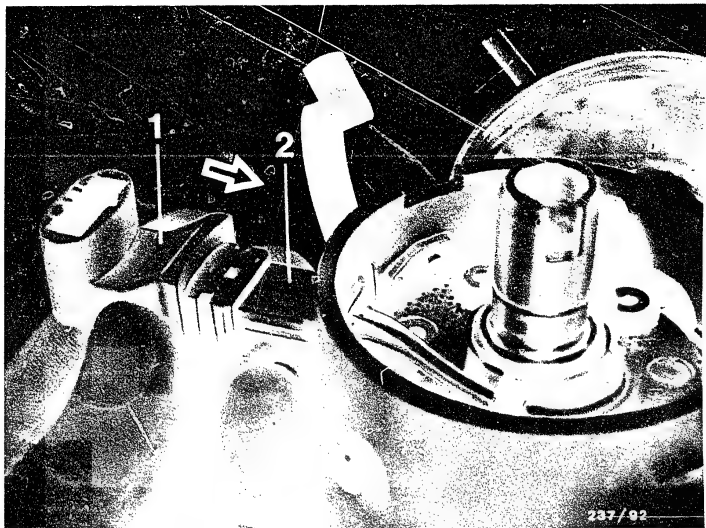
If installed: Screw on the auxiliary magnet.

B 13

Installing the pulse generator

Ignition distributors 0 237..., ZV-H



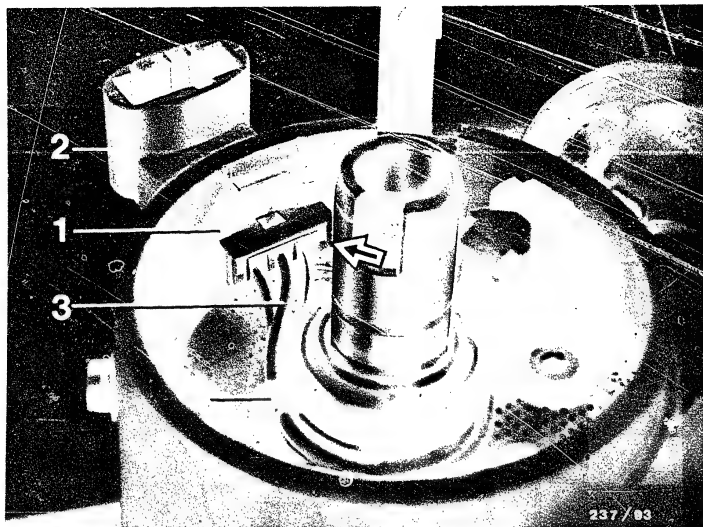


1 = Socket

2 = Electric lead with plug housing

If installed: Slide the electric lead with plug housing as far as it will go into the socket.
Install the socket in the distributor housing.



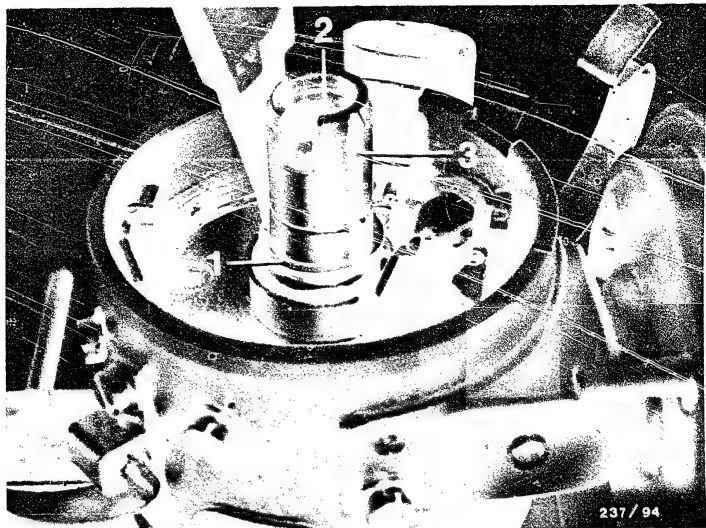


- 1 = Tab washer
- 2 = Socket
- 3 = Electric leads with plug housing
- 4 = Cable clip

The plug housing must finish flush with the socket.
 (See arrow)
 Fit the tab washer.

Hook the electric lead into the cable clip. The leads must not be twisted inside the cable clip.



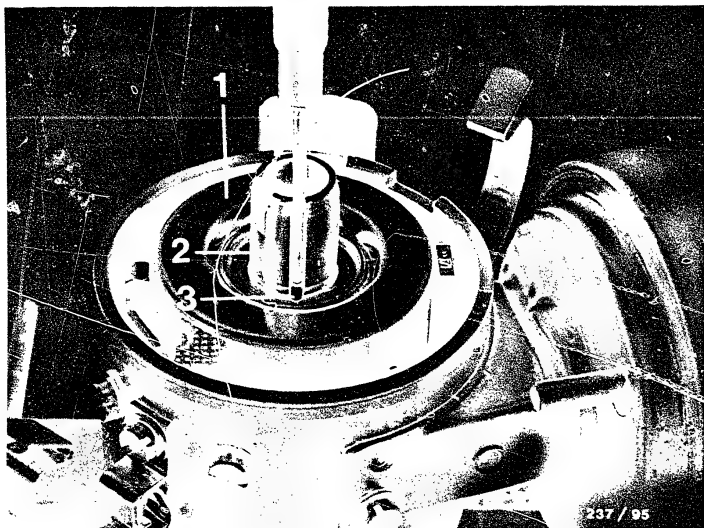


- 1 = Retainer
- 2 = Rotor sleeve
- 3 = Rotor sleeve groove

Fit the lower retainer with the opening at 180° to the rotor sleeve groove.

Caution: The retainer must be latched in position all the way round.



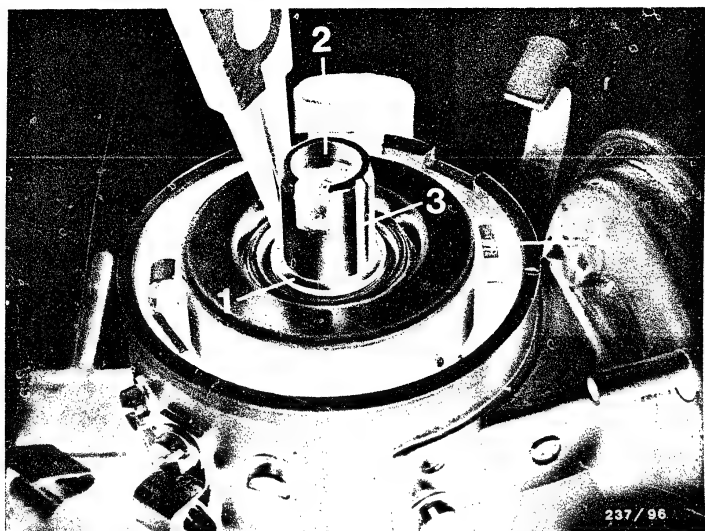


- 1 = Trigger wheel
- 2 = Rotor sleeve
- 3 = Straight pin

Slide the new trigger wheel over the rotor sleeve and press down as far as it will go. Bring the grooves in the trigger wheel and the rotor sleeve into alignment.

Introduce the straight pin into the groove and drive in with a punch until the straight pin is flush with the trigger wheel.





1 = Retainer

2 = Rotor sleeve

3 = Rotor sleeve groove

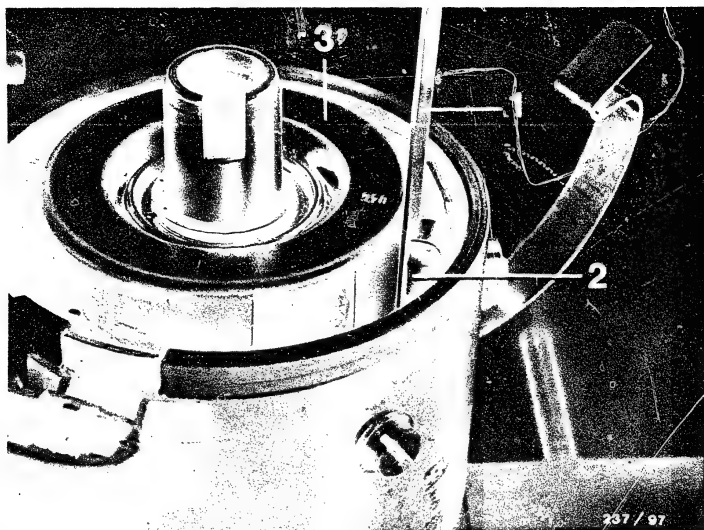
4 = Magnetic pickup assembly

If fitted previously, slip the corrugated washer over the rotor sleeve. Fit the upper retainer with the opening at 180° to the rotor sleeve groove.

Caution: The retainer must be latched in position all the way round.

Turn the distributor shaft by hand.

The trigger wheel must not brush against the magnetic pickup assembly.



1 = Feeler gauge
2 = Auxiliary magnet

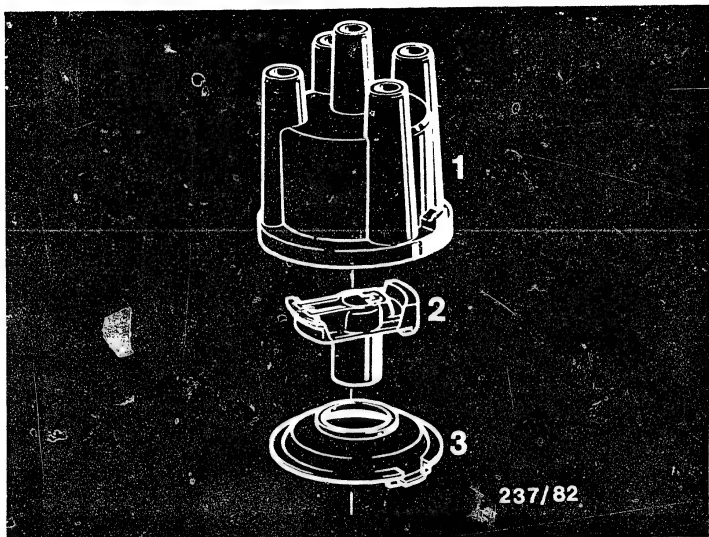
3 = Trigger wheel

If installed: Using a feeler gauge, test the air gap between the auxiliary magnet and the trigger wheel.
0.4...0.7 mm

If this value is not reached, then appropriately bend the holder of the auxiliary magnet.

Caution: Do not bend the trigger wheel.

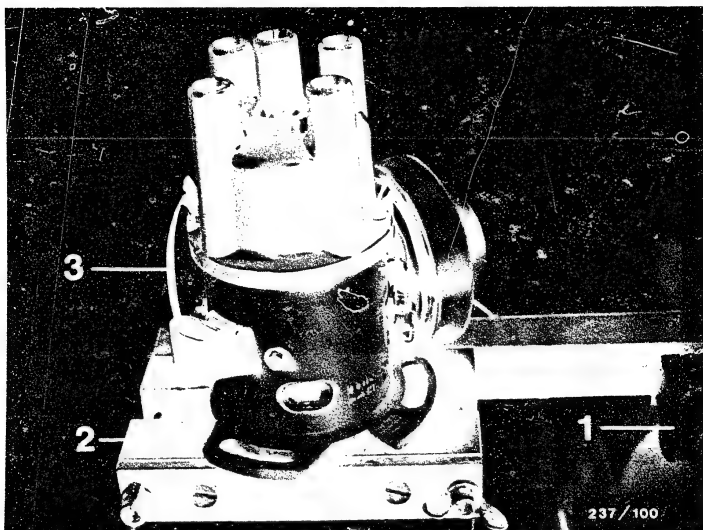




- 1 = Dust-protection cover
- 2 = Distributor rotor
- 3 = Distributor cap

Install the dust-protection cover, distributor rotor and distributor cap.





1 = Vise

3 = Holding springs

2 = Clamping fixture

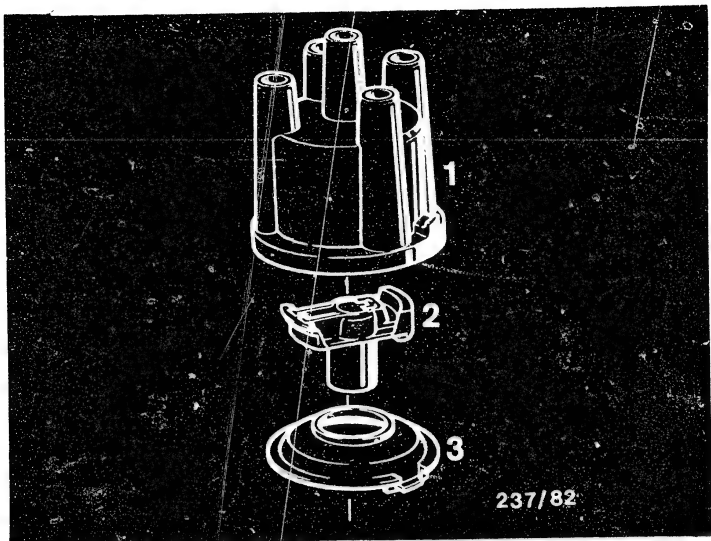
5. Repairing the pulse generator - short-type ignition distributors

5.1 Removing the pulse generator

Clamp the ignition distributor with clamping fixture in a vise.

Caution: If the distributor is clamped without the clamping fixture, the bearing bushing will be damaged. Release the distributor cap holding springs with a screwdriver.

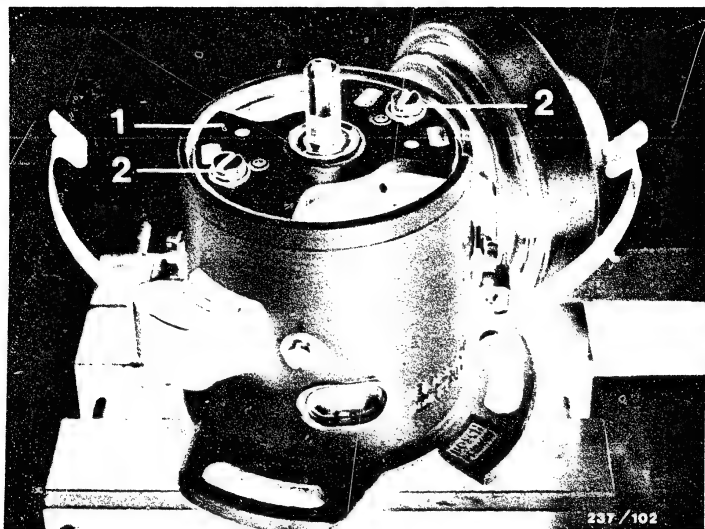




- 1 = Distributor cap
- 2 = Distributor rotor
- 3 = Dust-protection cover

Remove the distributor cap, distributor rotor and dust-protection cover.





- 1 = Bearing end plate
2 = Fastening screws

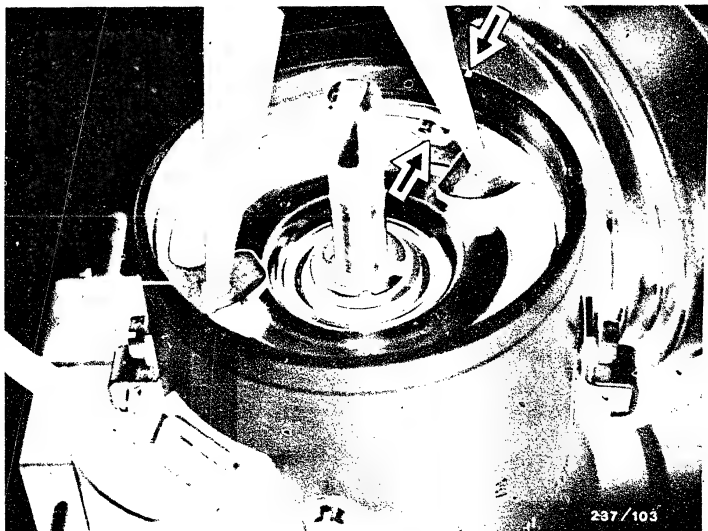
Loosen the fastening screws of the bearing end plate (captive screws).
Take off the bearing end plate.

C3

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





- 1 = Clamping ring
2 = Round-nose pliers

Mark the position of the clamping ring (see arrow) on the distributor housing.

Note: Clamping ring can be turned 360° .

Remove clamping ring with pliers.





1 = Retainer

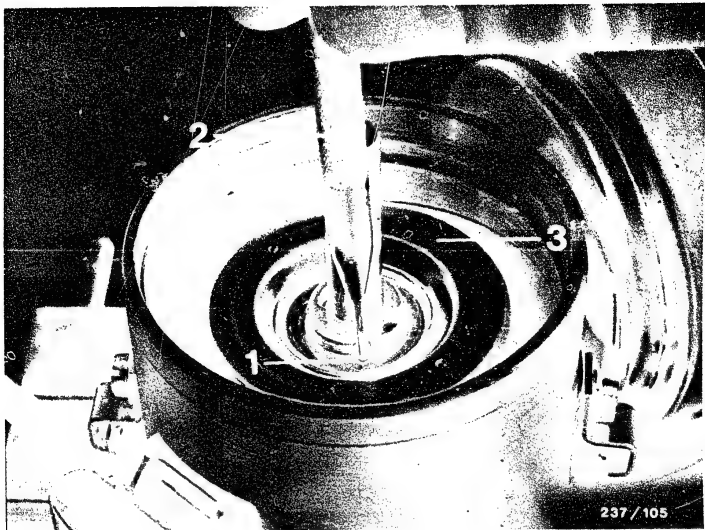
Remove the upper retainer using pliers. If there is a corrugated washer underneath it, remove it.

C5

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Straight pin
2 = Punch

3 = Trigger wheel

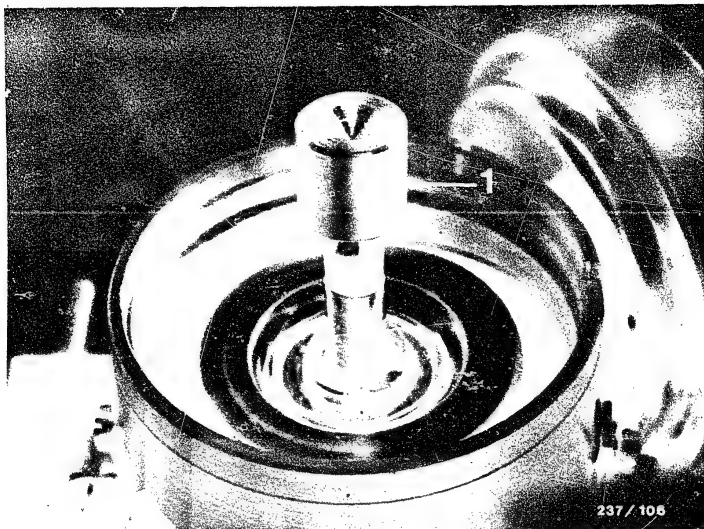
Using a punch, tap down the straight pin by approx. 0.5 mm (see picture). This makes it easier to remove the trigger wheel.

C6

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Pressure piece

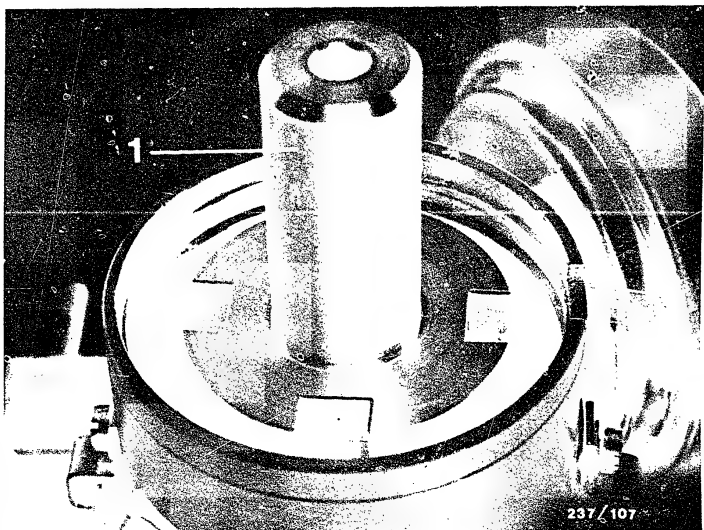
Mount the pressure piece of the puller on the distributor shaft.

C7

Removing the pulse generator

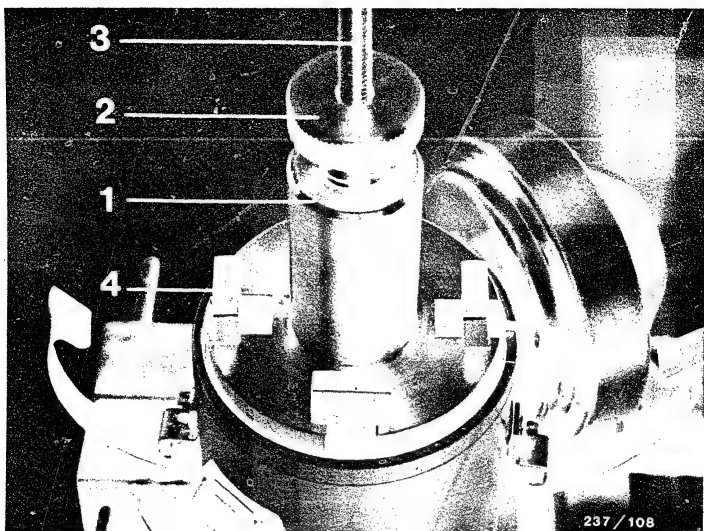
Ignition distributors 0 237..., ZV-H





1 = Support ring

Position the support ring on the trigger wheel.



1 = Puller sleeve
2 = Hollow screw

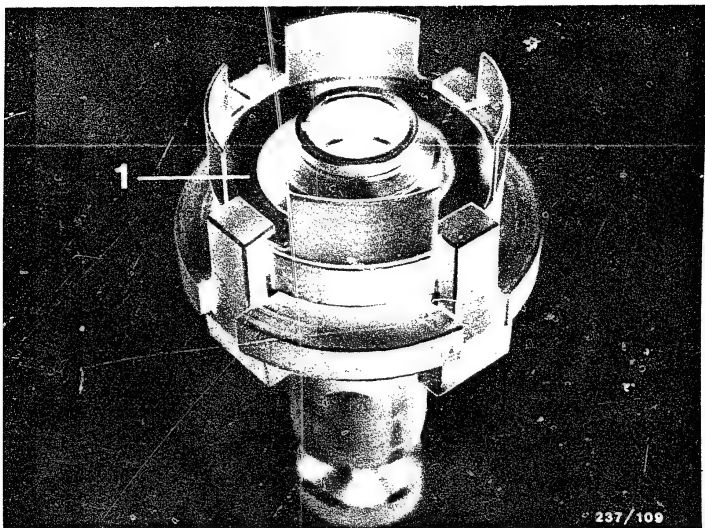
3 = Hexagon screw
4 = Extractor hook

Mount the puller sleeve. Turn back the hollow screw and hexagon screw.

Introduce the extractor hook through the opening and slide inward.

Tighten the hollow screw by hand (until resistance can be felt).



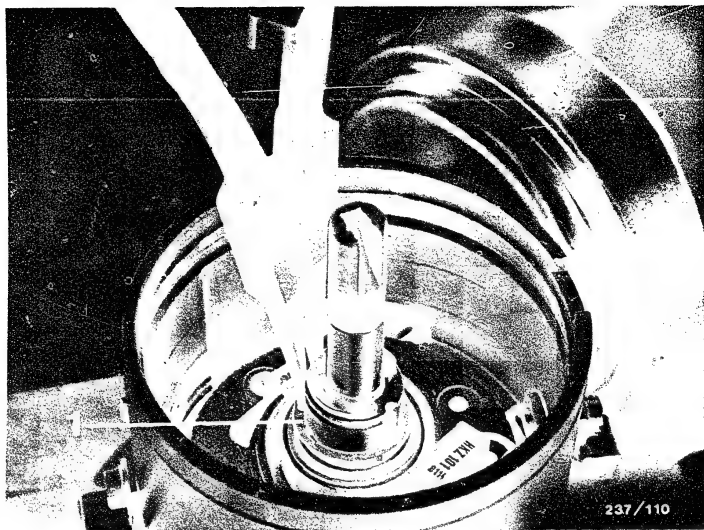


1 = Trigger wheel (viewed from below)

Turn the hexagon screw of the puller in a clockwise direction and remove the triggerwheel.

Remove the loose straight pin from the ignition distributor (pulse generator).

Demolish the trigger wheel and scrap.



1 = Retainer

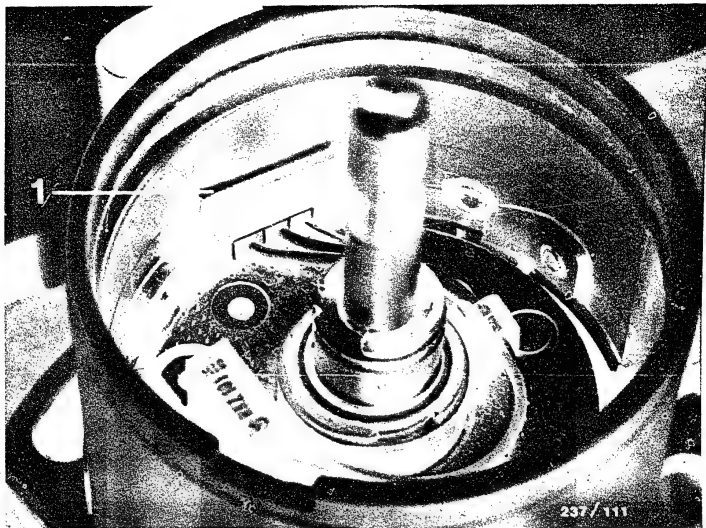
Remove the lower retainer using pliers.

C11

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Tab washer

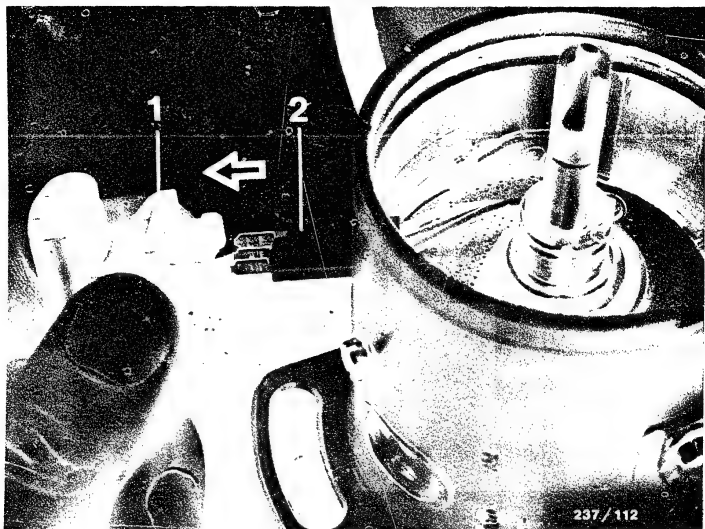
Withdraw the tab washer from above.

C12

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





1 = Socket

2 = Electric lead with plug housing

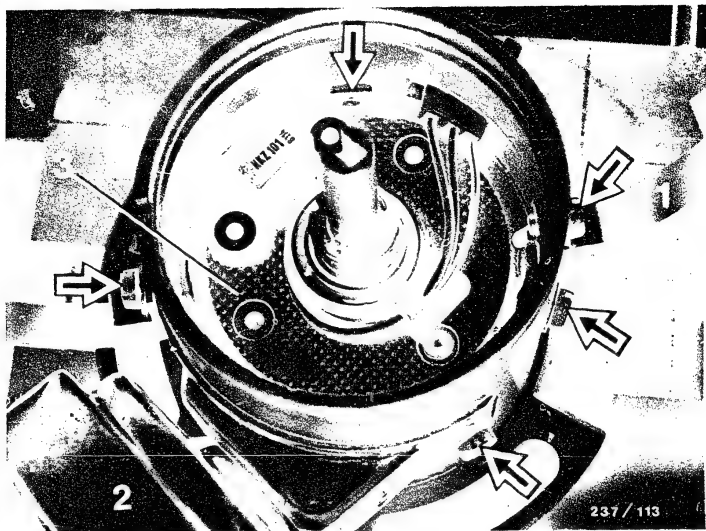
Pull the socket out of the distributor housing.
Carefully pull the electric lead with plug housing out
of the socket.

C13

Removing the pulse generator

Ignition distributors 0 237..., ZV-H





- 1 = Holding springs
- 2 = Vacuum advance mechanism
- 3 = Pulse generator

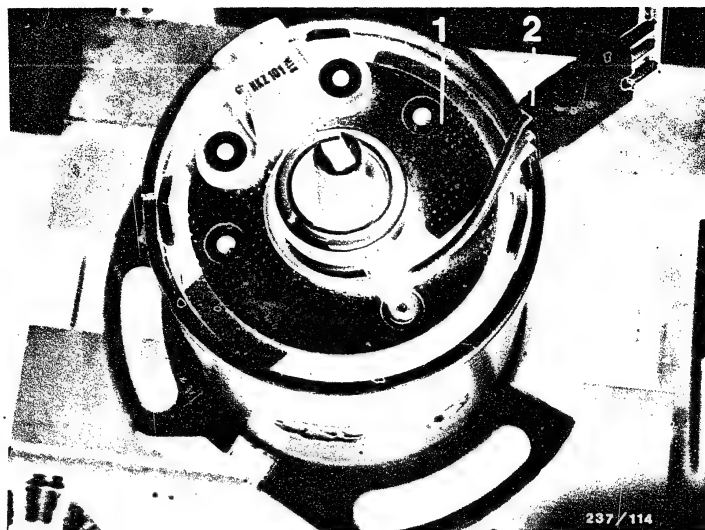
Unscrew the screws of the holding springs, vacuum advance mechanism and pulse generator (see arrows). Lower the vacuum advance mechanism downward and pull out of the distributor housing.

C14

Removing the pulse generator

Ignition distributors 0 237..., ZV-H



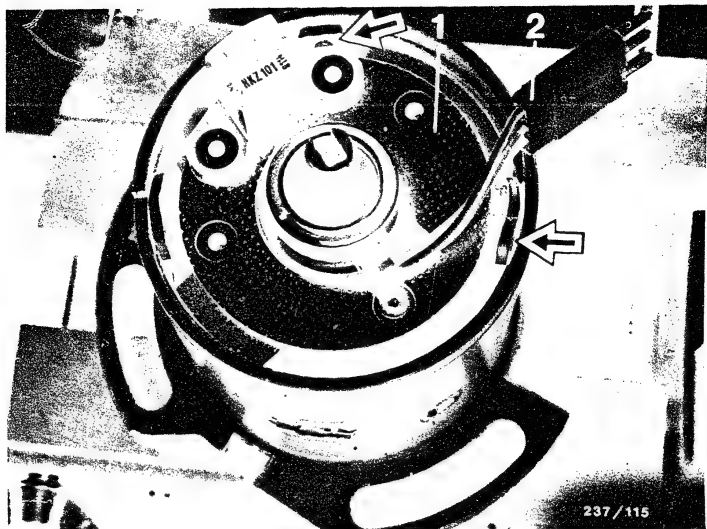


1 = Pulse generator

2 = Electric lead with plug housing

Remove the pulse generator with electric lead from the distributor housing.





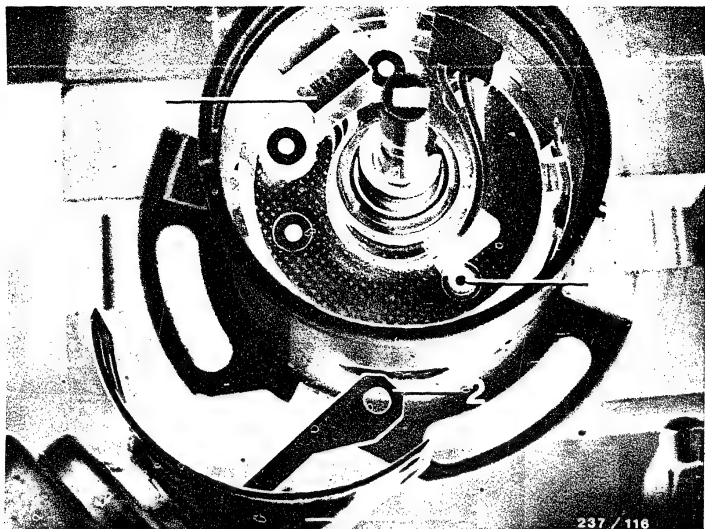
- 1 = Pulse generator
2 = Electric lead with plug housing

5.2 Installing the pulse generator

Install the new pulse generator with electric lead in the distributor housing. First of all, position 2 pulse generator screws (see arrows) and tighten.

Note: Common screw for pulse generator and vacuum advance mechanism is screwed on later.





237 / 116

1 = Vacuum advance mechanism
2 = Tie rod

3 = Bearing pin
4 = Magnetic pickup
assembly

Turn the magnetic pickup assembly as far as it will go against the direction of rotation of the distributor and hold in that position.

Introduce the vacuum advance mechanism into the distributor housing and hook the tie rod into the bearing pin of the pulse generator.

While loosely installed, move the vacuum advance mechanism to and fro and check whether the magnetic pickup assembly moves.

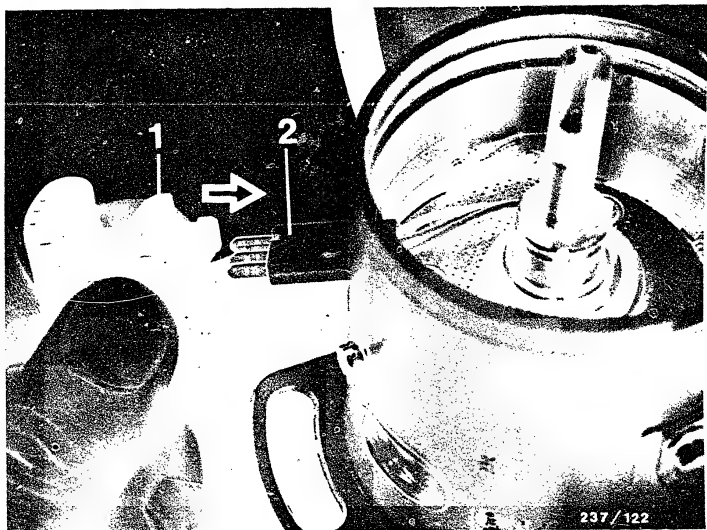
Screw on the screws of the vacuum advance mechanism, holding springs and pulse generator and tighten.

C17

Installing the pulse generator

Ignition distributors 0 237..., ZV-H



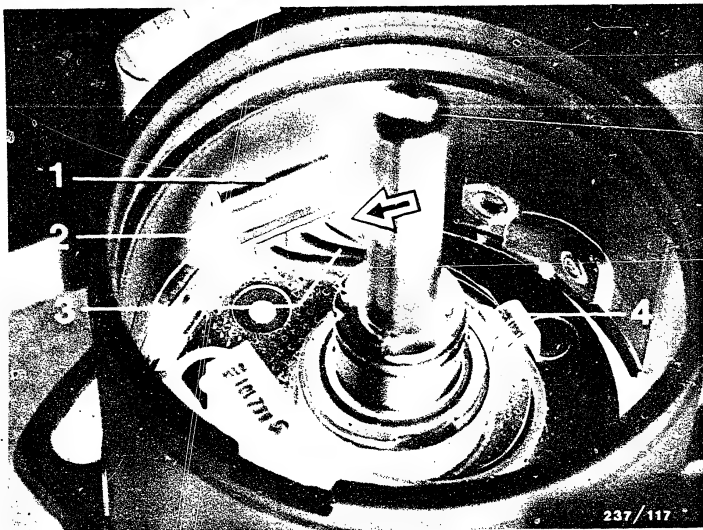


1 = Socket

2 = Electric lead with plug housing

Slide the electric lead with plug housing as far as it will go into the socket. Install the socket in the distributor housing.





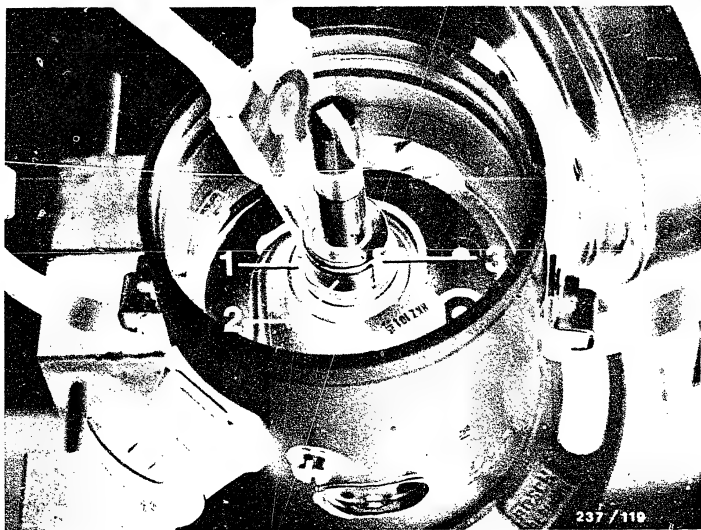
- 1 = Tab washer
- 2 = Socket
- 3 = Electric lead with plug housing
- 4 = Cable clip

The plug housing must finish flush with the socket (see arrow).

Fit the tab washer.

Hook the electric lead into the cable clip. The leads must not be twisted inside the cable clip.





1 = Retainer

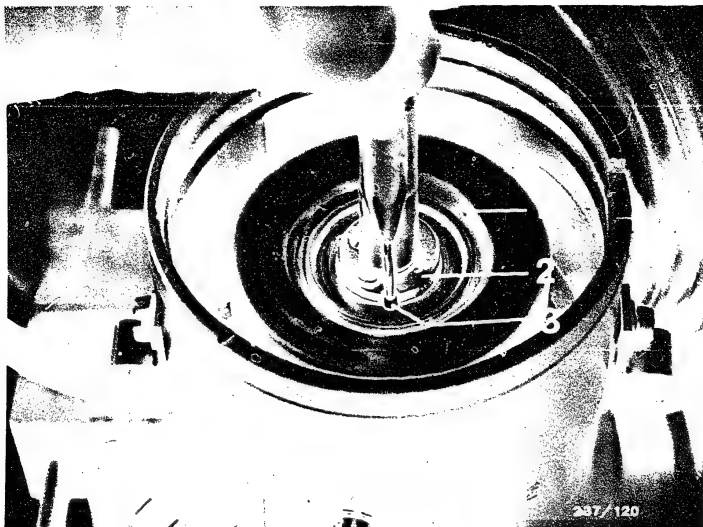
3 = Rotor sleeve groove

2 = Rotor sleeve

Fit the lower retainer with the opening at 180° to the rotor sleeve groove.

Caution: The retainer must be latched in position all the way round.



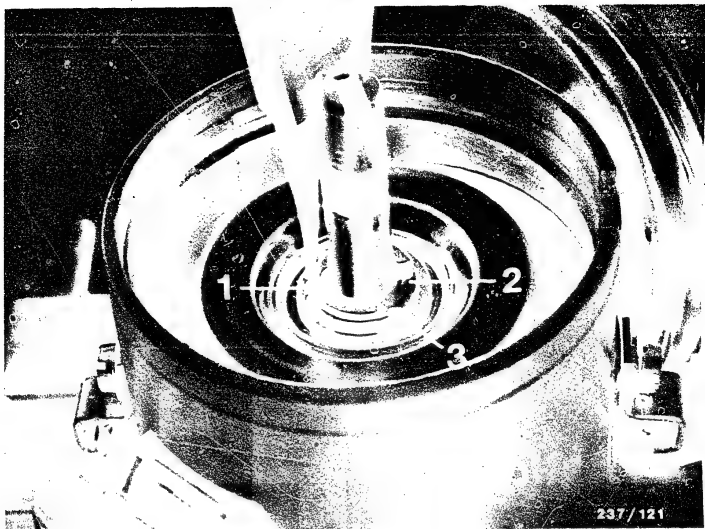


1 = Trigger wheel
2 = Rotor sleeve

3 = Straight pin

Slide the new trigger wheel over the rotor sleeve and press down as far as it will go.
Bring the grooves in the trigger wheel and rotor sleeve into alignment.
Introduce the straight pin into the groove and drive in with a punch until the straight pin is flush with the trigger wheel.





1 = Retainer
2 = Rotor sleeve

3 = Rotor sleeve groove

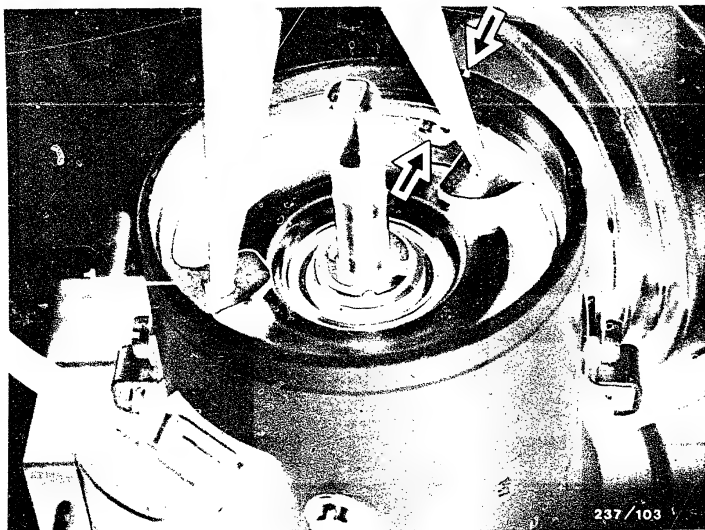
If fitted previously, slip the corrugated washer over the rotor sleeve. Fit the upper retainer with the opening at 180° to the rotor sleeve groove.

Caution: The retainer must be latched in position all the way round.

Turn the distributor shaft by hand.

The trigger wheel must not brush against the magnetic pickup assembly.

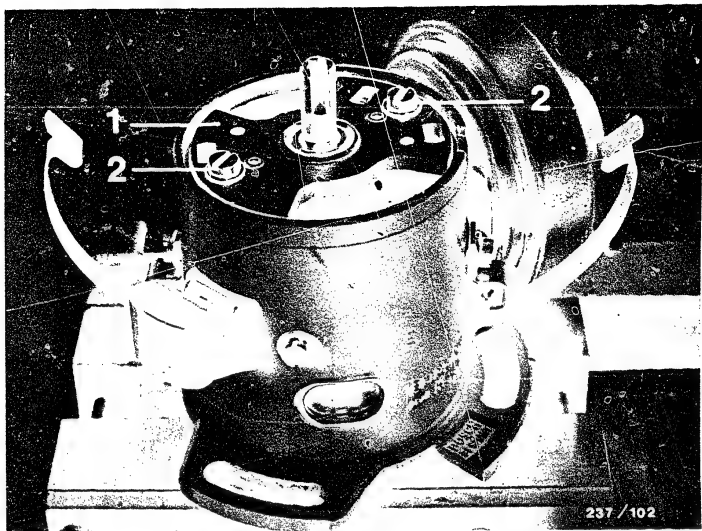




1 = Clamping ring

Fit the clamping ring using pliers.
Note the installation position of the clamping ring
(mark).





- 1 = Bearing end plate
2 = Fastening screws

Mount the bearing end plate. Tighten the fastening screws.

Re-fit the dust-protection cover, distributor rotor and distributor cap.



6. Testing

6.1 Test instructions

All speeds given in the test specifications refer to the drive shaft of the ignition distributor. The direction of rotation of the distributor (viewed looking down on the distributor cap) is given in the type designation, e.g.

IFU4 ← = clockwise rotation → = counterclockwise rotation

or

Z 415 ← = clockwise rotation → = counterclockwise rotation.

Caution!

The holding springs of the distributor cap must not fall into the generator system when the distributor shaft is driven with the dust-protection cover removed.

Be very careful when working with an open ignition distributor. No metal chips must be allowed to enter the generator system (the air gap could be bridged by a metal chip).

Only drive the ignition distributor with the drive gear or coupling mounted in place (incorrect measurements can result from excessive longitudinal play in the distributor shaft).

Perform the measurements at room temperature and at the stated voltage.

The ignition vane switch will be destroyed in the case of incorrect polarity.



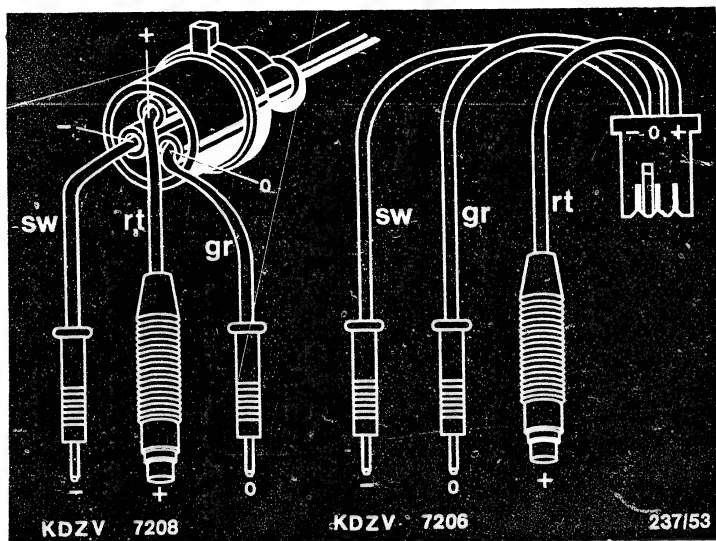
6.2 Visual examination

The distributor cap and the distributor rotor must be clean and must have no cracks or leakage paths.

The original lead must be installed and the connections must be tight and not damaged.

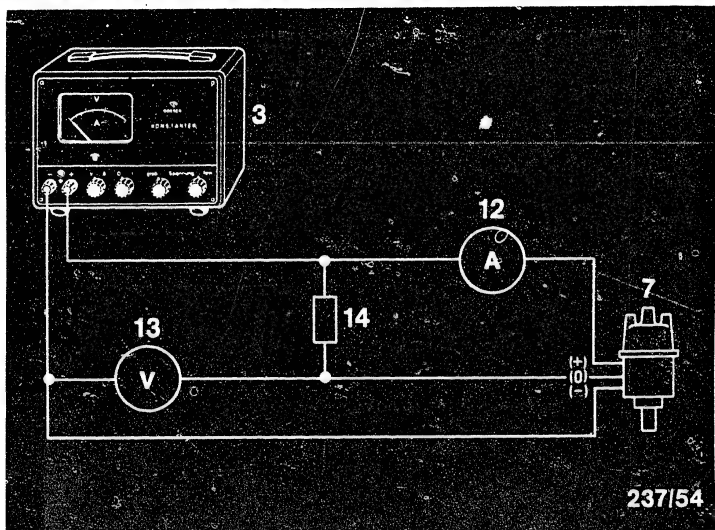
The distributor rotor, trigger wheel and ignition vane switch must not show any damage and the distributor rotor must be firmly positioned on the distributor shaft. It must be possible to turn the distributor shaft by hand and the trigger wheel must not graze the ignition vane switch.





6.3 Preparations for testing

The connecting cables KDZV 7206 and KDZV 7208 are required for testing the pulse generator system.

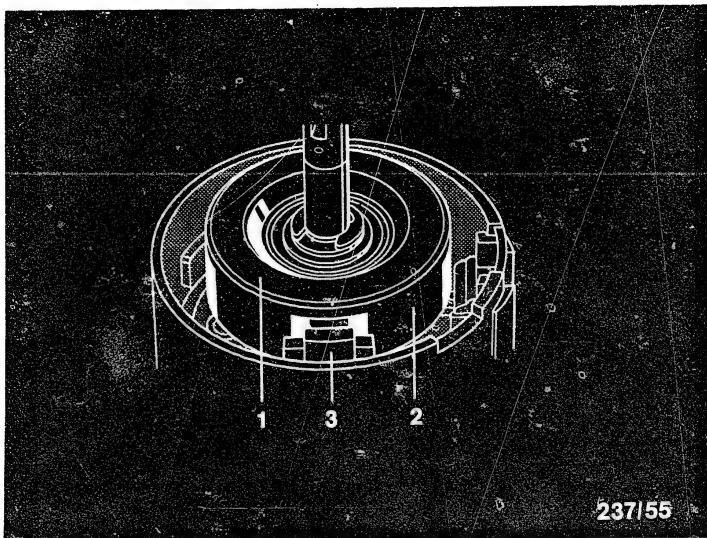


- 3 = Voltage stabilizer/battery
- 7 = Ignition distributor
- 12 = Ammeter
- 13 = Voltmeter
- 14 = Resistor 1.5 k Ω

6.4 Testing the pulse generator system - magnetic pick-up assembly "ON"

Switch on the voltage stabilizer and set to 12 V. Switch off the voltage stabilizer. Mount the ignition distributor on the distributor test bench and connect in accordance with the above terminal diagram.

Follow the operating instructions of the individual testers.



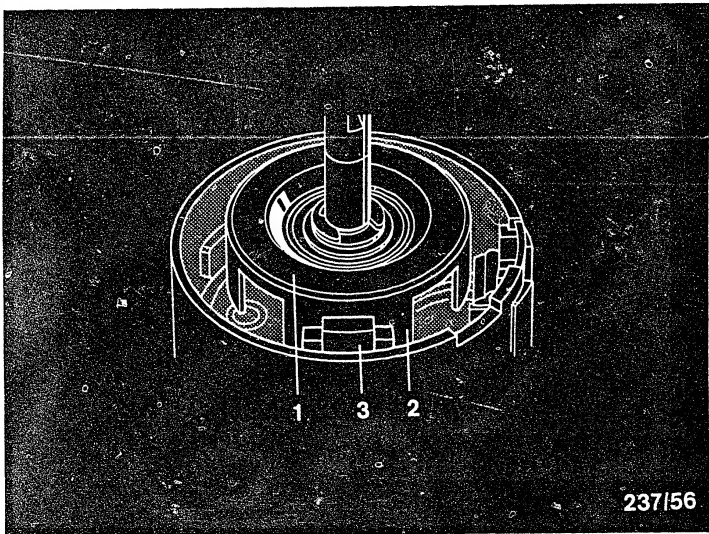
- 1 = Trigger wheel
- 2 = Vane
- 3 = Ignition vane switch

Turn distributor shaft by hand until vane is outside air gap of ignition vane switch (see illustration).

Switch on voltage supply.

The voltmeter may indicate max. 0.4 V, the ammeter max. 20 mA.





237/56

- 1 = Trigger wheel
- 2 = Vane
- 3 = Ignition vane switch

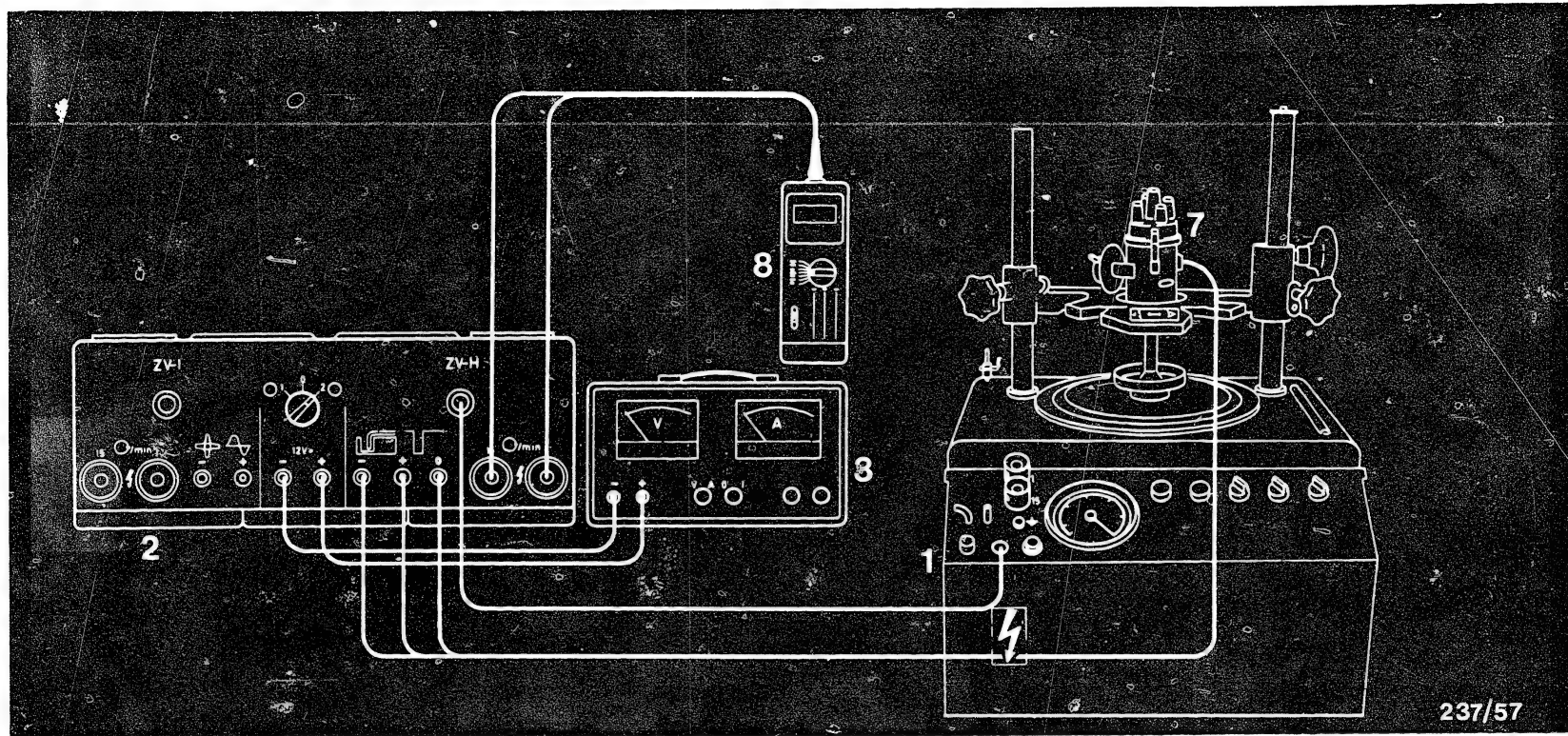
6.5 Testing the pulse generator system - magnetic pick-up assembly "OFF"

Turn distributor shaft by hand until vane (2) is completely in air gap of ignition vane switch (3) (see illustration).

The voltmeter must indicate min. 11V.

If the stated values are not reached, the ignition vane switch is defective.

Switch off the voltage supply.



- 1 = Distributor test bench
 2 = Distributor test adapter (ZV-H)
 3 = Voltage stabilizer/battery
 7 = Ignition distributor
 8 = Tachometer

6.6 Testing the centrifugal advance (test specifications W-237/1001...)

For testing the centrifugal advance curve, use only the ZV-H test adapter KDZV 7202 specified in the test specifications.

Mount the ignition distributor and connect to the testers and the ZV-H test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

D7

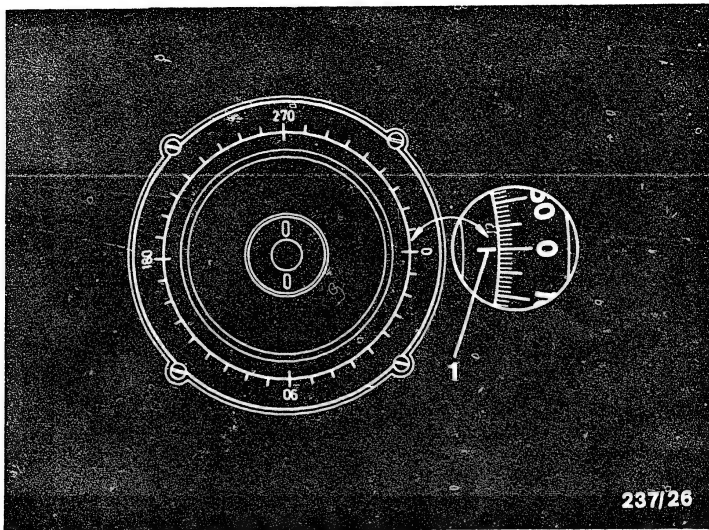
Testing
 Ignition distributors 0 237..., ZV-H



D8

Testing
 Ignition distributors 0 237..., ZV-H





237/26

1 = Illuminated mark

Switch on the 12V voltage supply.

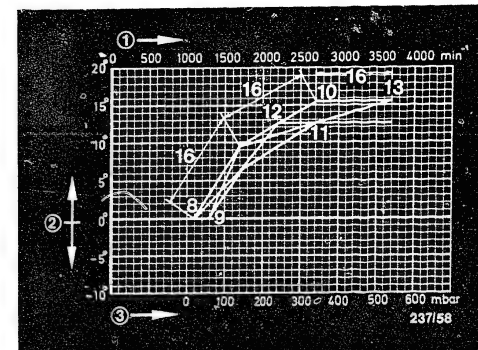
Drive the ignition distributor at a speed 100 min^{-1} below the speed of the earliest start of centrifugal advance (see test specifications).

Then turn the scale ring of the distributor test bench or the ignition distributor so that the illuminated mark of a cylinder lights up at $0^\circ/360^\circ$ (zero point). See illustration. Tighten locking screw of ignition distributor or clamping ring of chuck.



The most practical method of testing the centrifugal advance is to proceed so that each curve is checked at least twice in every range covered by a change in curve direction, and at least twice in the final control range. The test is only to be carried out with increasing speed. (This avoids measurement errors). Read off the advance angle and compare it with the test specifications. See figure for examples. If an addition to the tolerance range of $\pm 0.5^\circ$ is given in the test specifications, the upper line of the tolerance range must be extended by 0.5° to the top, and the lower line by 0.5° to the bottom. If the specified values are not reached, the ignition distributor (advance system) is defective.

Switch off the voltage supply.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 8/9 = Start of centrifugal advance
- 10/11 = End of centrifugal advance
- 12/13 = In extreme cases the end of centrifugal advance may be located here
- 16 = Change in curve direction

D10

Testing

Ignition distributors 0 237...,ZV-H

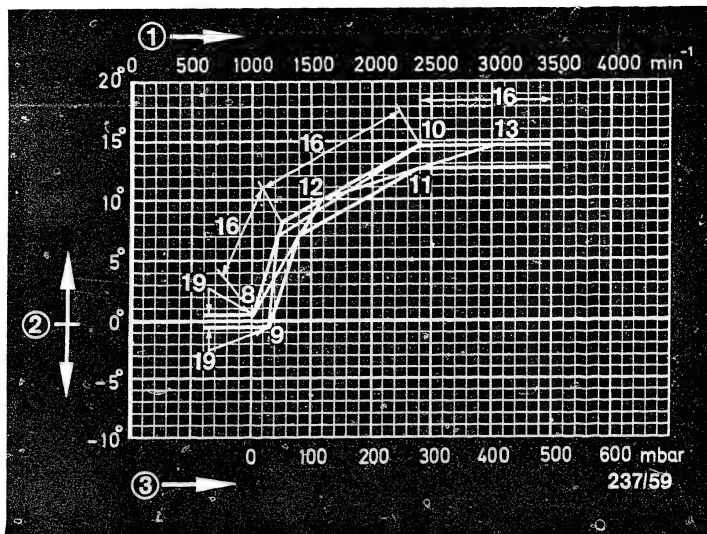


D11

Testing

Ignition distributors 0 237...,ZV-H



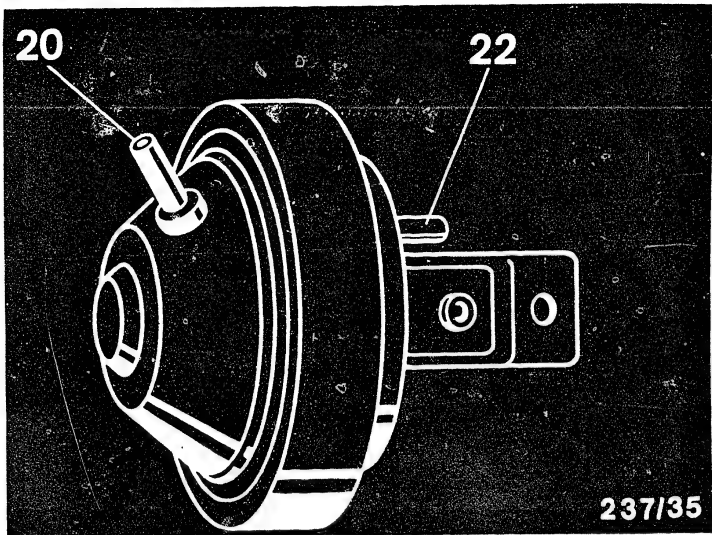


- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 8/9 = Start of centrifugal advance
- 10/11 = End of centrifugal advance
- 12/13 = In extreme cases the end of centrifugal advance may be located here
- 16 = Change in curve direction
- 19 = "Adjustment base"

Advance curve with "adjustment base" (19)

After the zero point adjustment of the distributor test bench (scale ring) it is possible, without the centrifugal advance operating, for there already to be a slight advance (max. 0.50°) although the actual centrifugal advance only starts at points 8/9.





20 = Vacuum connection "advance"

22 = Vacuum connection "retard"

Note: According to DIN the term "vacuum" should be replaced by negative "gauge pressure". For the sake of clarity, however, we will continue to use "vacuum".

6.7 Testing the vacuum advance

6.7.1 Testing the vacuum unit for leaks (not given in test specifications)

Connect the vacuum hose from the distributor test bench to the vacuum unit.

Using the vacuum pump, increase the vacuum until 600 mbar is reached. Switch off the vacuum pump.

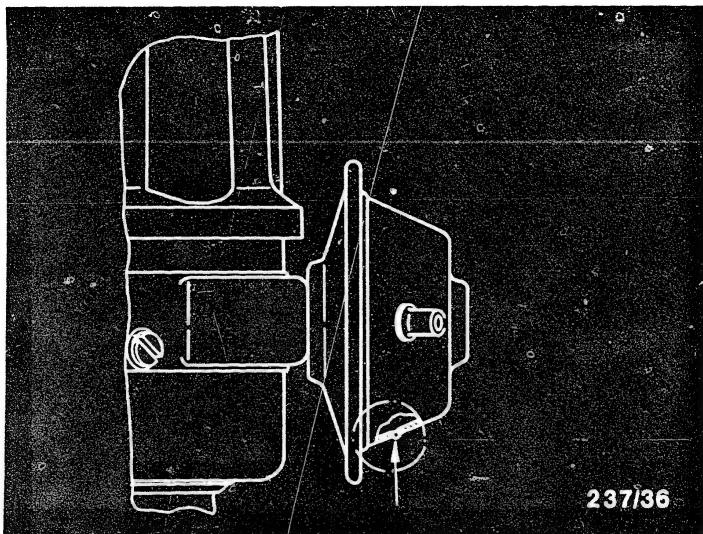
The maximum permissible pressure drop in 1 minute is 20%. Remedy any leaks found at the connection. Replace vacuum-advance mechanism if leaking.

D14

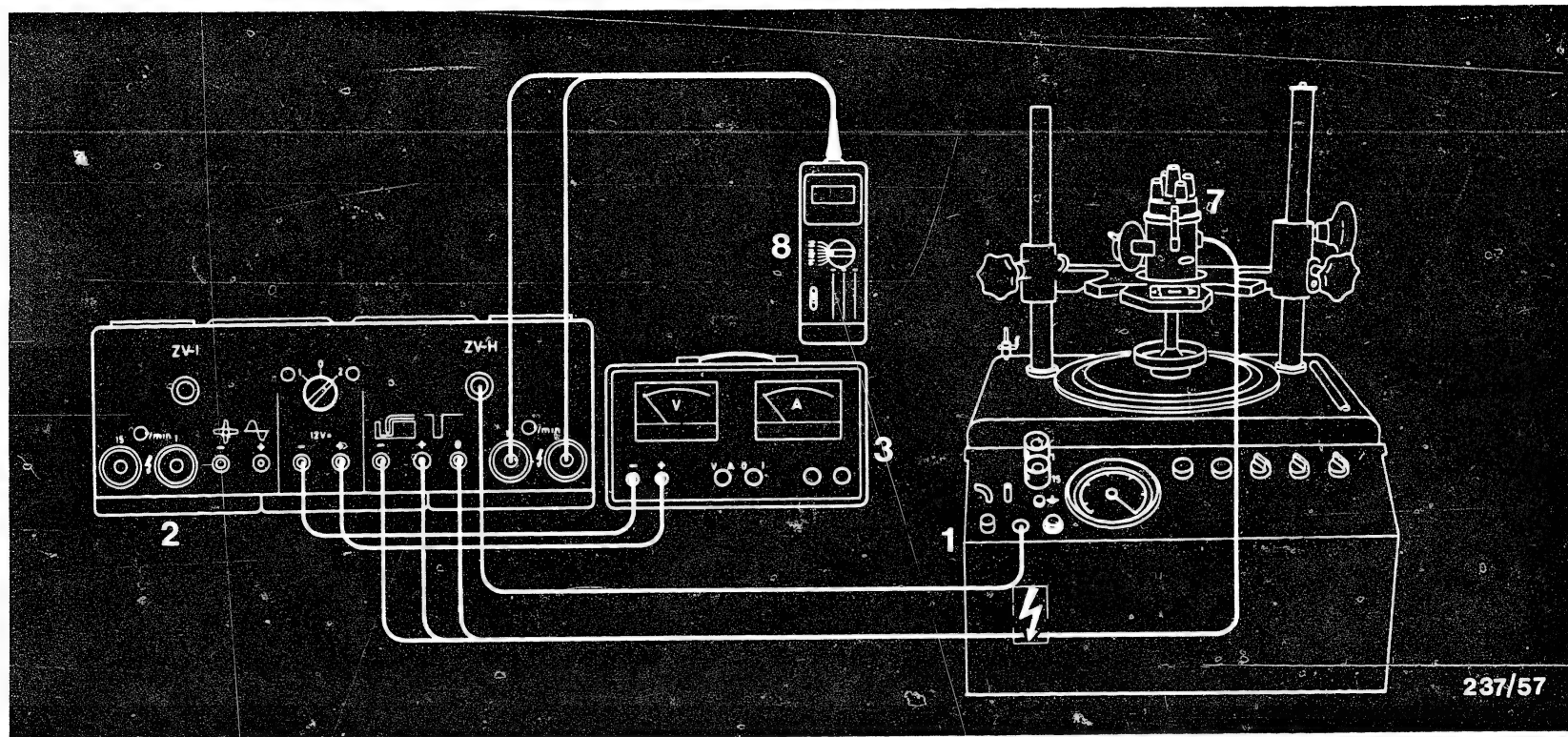
Testing

Ignition distributors 0 237..., ZV-H





If there is an extremely heavy drop in pressure, check whether the vacuum unit is of the type which has a vent hole (approx. 0.5 mm diameter). See picture, arrow.
Seal off the hole while testing for leaks.



- 1 = Distributor test bench
 2 = Distributor test adapter (ZV-H)
 3 = Voltage stabilizer/battery
 7 = Ignition distributor
 8 = Tachometer

6.7.2 Testing the centrifugal advance (test specifications W-237/1001...)

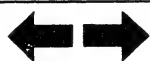
For testing the centrifugal and vacuum advance curve, use only the ZV-H test adapter KDZV 7202.

Connect the ignition distributor, testers and ZV-H test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

D16

Testing

Ignition distributor 0 237 ..., ZV-H

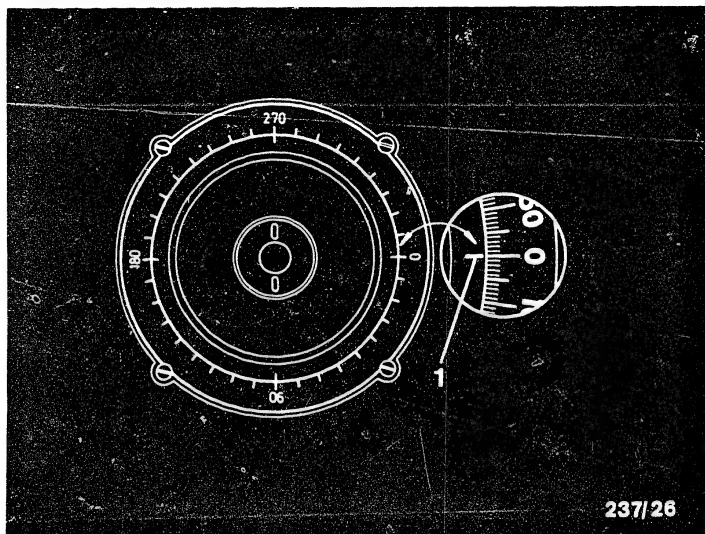


D17

Testing

Ignition distributor 0 237 ..., ZV-H





237/26

1 = Illuminated mark

Switch on the 12 V voltage supply.

Drive the ignition distributor at a speed 200 min⁻¹ above the end of centrifugal advance (see test specifications).

Then turn the scale ring of the distributor test bench or the ignition distributor so that the illuminated mark of a cylinder lights up at 0°/360° (zero point). See illustration.

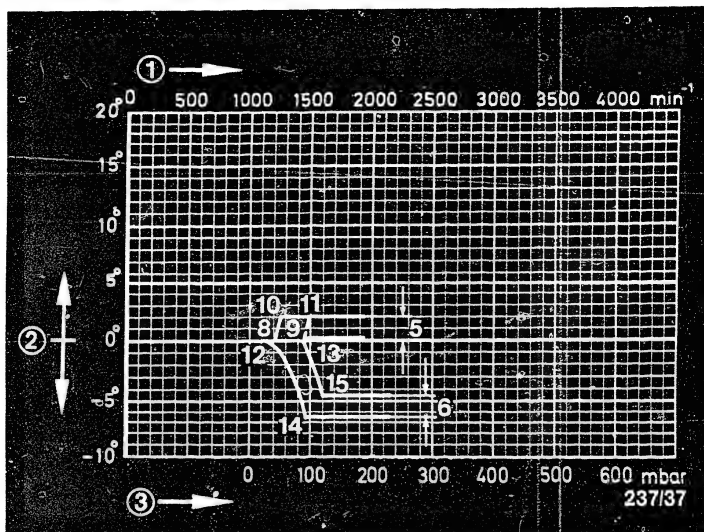
Tighten locking screw of ignition distributor or clamping ring of check.

D18

Testing

Ignition distributor 0 237 ..., ZV-H





- | | |
|--|--|
| 1 = Distributor-shaft speed | 8/9, 12/13 start of vacuum advance "advance and retard unit" |
| 2 = Distributor-shaft advance | |
| 3 = Negative gauge pressure (vacuum) | 10/11, 14/15 end of vacuum advance "advance and retard unit" |
| 5 = Negative gauge pressure (vacuum) advance | |
| 6 = Negative gauge pressure (vacuum) retard | |

With increasing vacuum, check whether the advance angle is within the stated tolerance range. See figure for example.

If an addition to the tolerance range of $\pm 0.5^\circ$ is given in the test specifications, the upper line must be extended by 0.5° to the top and the lower line by 0.5° to the bottom.

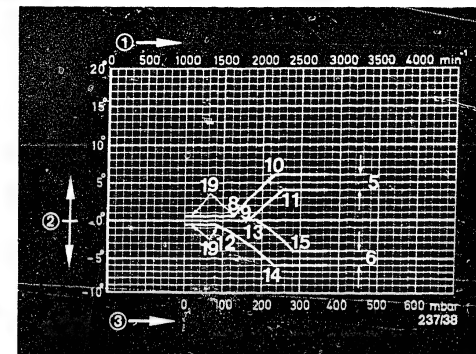


If the measured values are not within the tolerance range, then check the breaker-plate assembly and the tie rod for freedom of movement.
After reaching the end of advance, an increase in the vacuum must not result in a further advance.

Switch off the voltage supply.

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing vacuum, for there already to be a slight advance (max. 0.5°) although the actual vacuum advance only starts at points 8/9 or 12/13.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 5 = Negative gauge pressure (vacuum) advance
- 6 = Negative gauge pressure (vacuum) retard
- 8/9, 12/13 = Start of vacuum advance "advance and retard unit"
- 10/11, 14/15 = End of vacuum advance "advance and retard unit"
- 19 = "Adjustment base"

D20

Testing

Ignition distributors 0 237...,ZV-H



D21

Testing

Ignition distributors 0 237...,ZV-H



6.8 Testing the vacuum/overpressure advance - pressure unit with one or two connecting pipes

6.8.1 Testing the vacuum or overpressure unit for leaks (not given in test specifications)

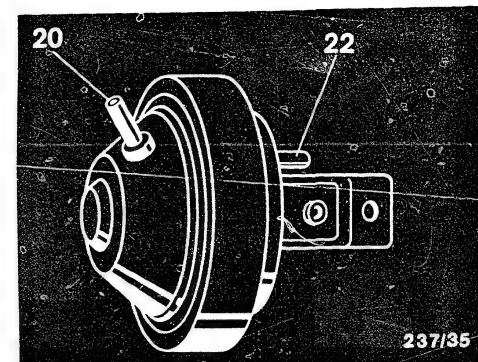
Connect the vacuum hose from the distributor test bench to the pressure unit.

In the case of the vacuum/overpressure unit with double retard, the overpressure unit is also tested for leaks using vacuum.

In the case of the vacuum/overpressure unit with one connecting pipe, the advance and retard unit is tested for leaks using vacuum.

Using the vacuum pump, increase the vacuum until 600 mbar is reached. Switch off the vacuum pump.

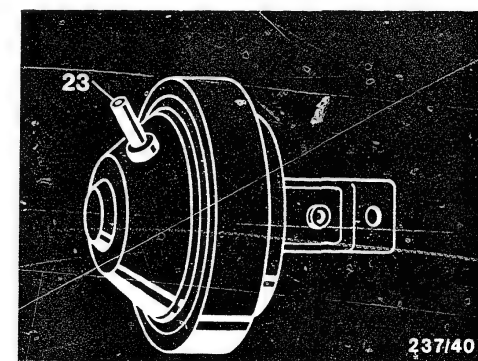
The max. permissible pressure drop in 1 minute is 20%. Remedy any leaks at the connection. Replace vacuum-advance mechanism if leaking.



20 = Vacuum connection
"retard"

22 = Overpressure connection
"retard"

23 = Vacuum connection
"advance"
and
overpressure connection
"retard"



D22

Testing

Ignition distributors 0 237...,ZV-H

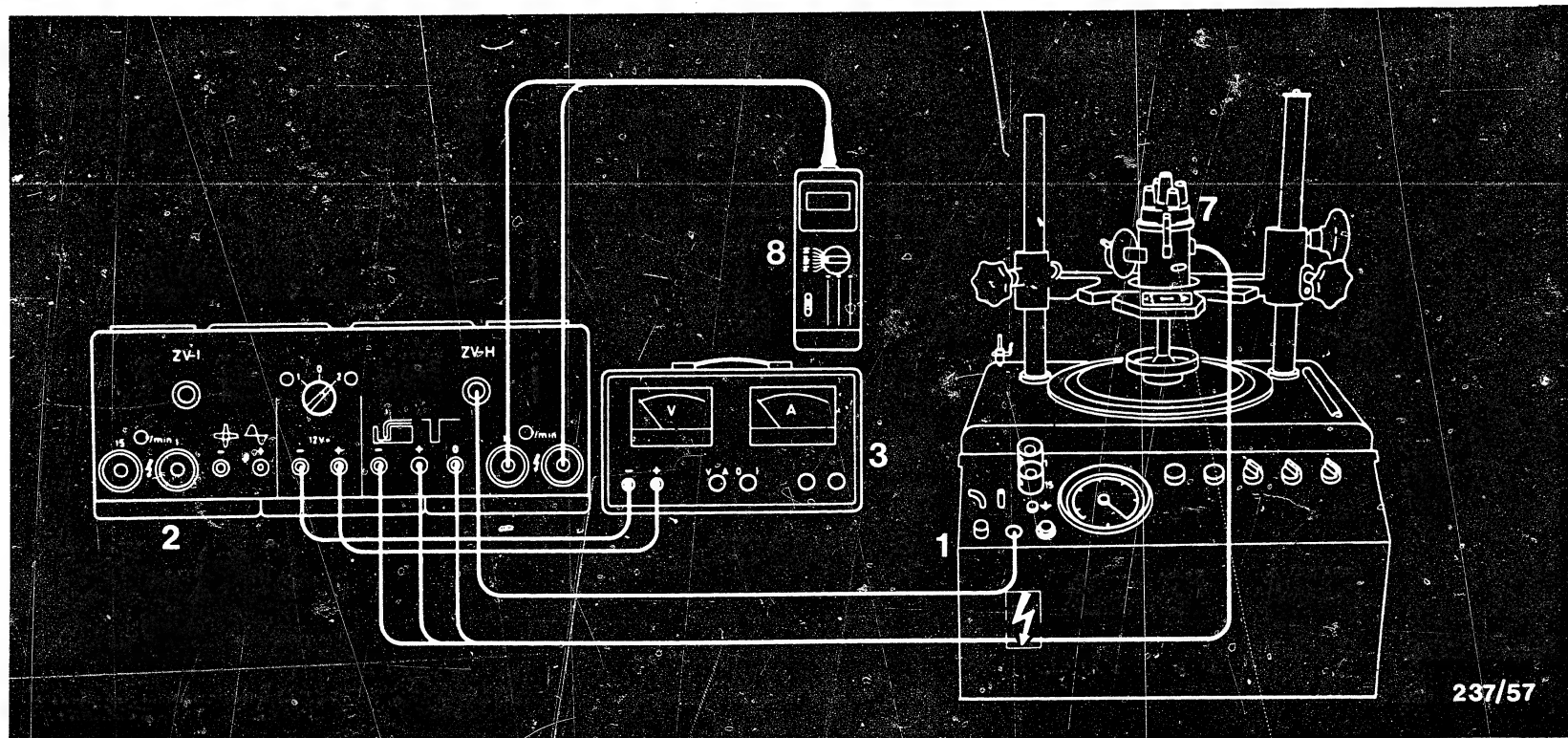


D23

Testing

Ignition distributors 0 237...,ZV-H





237/57

- | | |
|-------------------------------------|--------------------------|
| 1 = Distributor test bench | 7 = Ignition distributor |
| 2 = Distributor test adapter (ZV-H) | 8 = Tachometer |
| 3 = Voltage stabilizer/battery | |

6.8.2 Vacuum advance curve (test specifications W-237/1001)

For testing the centrifugal and vacuum advance curve, use only the ZV-H test adapter KDZV 7202.

Connect the ignition distributor, testers and ZV-H test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

E1

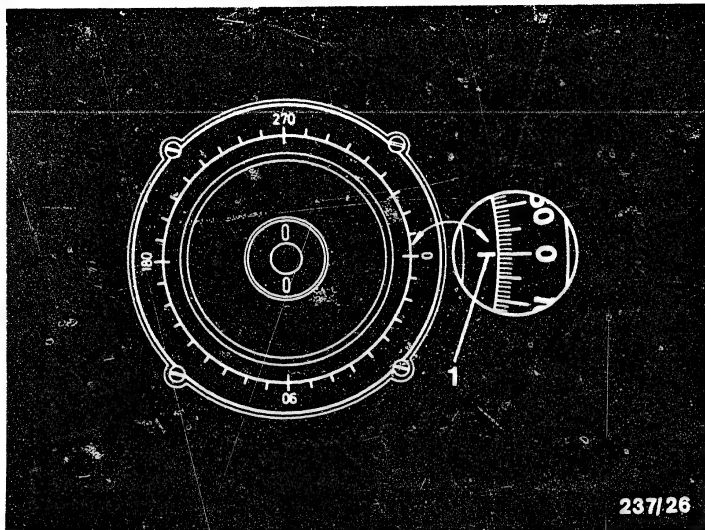
Testing
Ignition distributor 0 237 ..., ZV-H



E2

Testing
Ignition distributor 0 237..., ZV-H





237/26

1 = Illuminated mark

Switch on the 12 V voltage supply.

Drive the ignition distributor at a speed 200 min^{-1} above the end of centrifugal advance (see test specifications).

Then turn the scale ring of the distributor test bench or the ignition distributor so that the illuminated mark of a cylinder lights up at $0^\circ/360^\circ$.

See illustration.

Tighten locking screw of ignition distributor or clamping ring of chuck.

E3

Testing

Ignition distributor 0 237 ..., ZV-H



With increasing vacuum, check whether the advance angle is within the stated tolerance range. See figure for example.

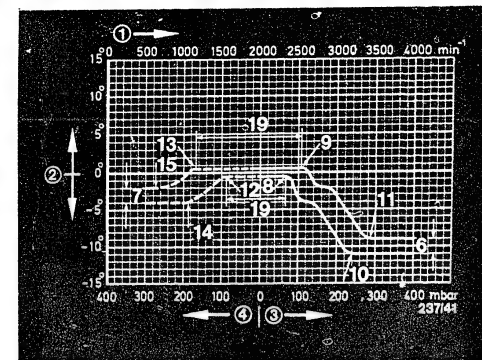
If an addition to the tolerance range of $\pm 0.5^\circ$ is given in the test specifications, the upper line must be extended by 0.5° to the top, and the lower line by 0.5° to the bottom.

If the measured values are not within the tolerance range, then check the breaker-plate assembly and the tie rod for freedom of movement.

After reaching the end of advance, an increase in the vacuum must not result in any further advance.

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing vacuum, for there already to be a slight advance (max. 0.5°) although the actual vacuum advance only starts at point 8/9.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 4 = Gauge pressure
- 6 = Negative gauge pressure (vacuum) retard
- 7 = Gauge pressure retard
- 8/9, 12/13 = Start of vacuum/overpressure advance with double retard
- 10/11, 14/15 = End of vacuum/overpressure advance with double retard
- 19 = "Adjustment base"

E4

Testing

Ignition distributors 0 237...,ZV-H



E5

Testing

Ignition distributors 0 237...,ZV-H

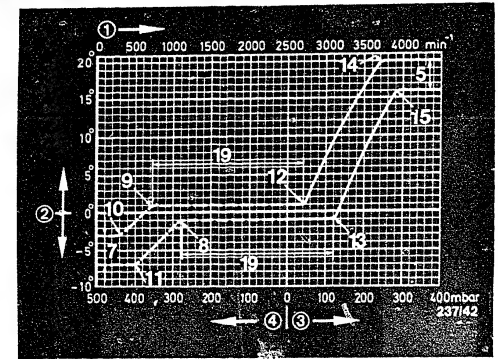


Further example of an advance curve, e.g. vacuum advance
Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing vacuum, for there to be a slight advance (max. 0.5°) although the actual vacuum advance only starts at point 12/13.

Note

The double unit with one connecting pipe advances when vacuum is applied to it and retards when overpressure is applied to it.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 4 = Gauge pressure
- 5 = Negative gauge pressure (vacuum) advance
- 7 = Gauge pressure retard
- 8/9, 12/13 =
Start of vacuum/overpressure advance with advance/retard
- 10/11, 14/15 =
End of vacuum/overpressure advance
- 19 = "Adjustment base"

E6

Testing

Ignition distributors 0 237...,ZV-H

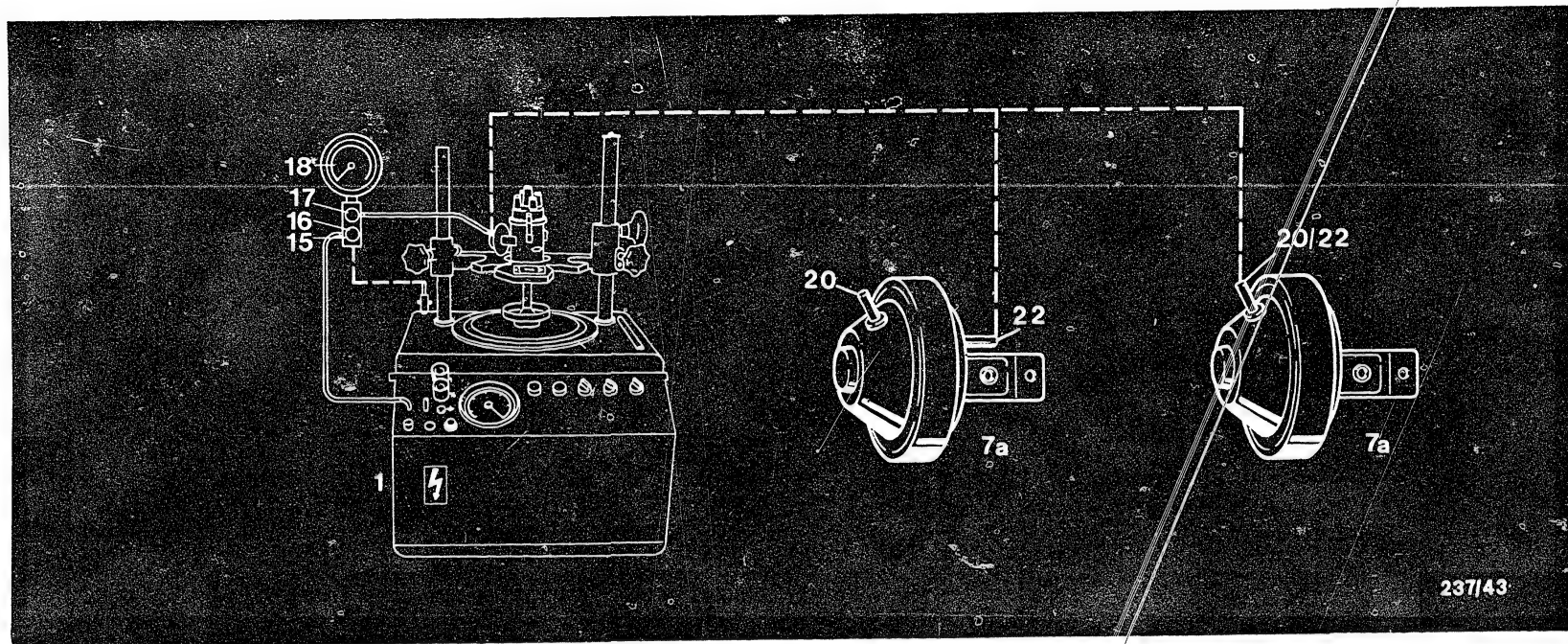


E7

Testing

Ignition distributors 0 237...,ZV-H





237/43

1 = Distributor test bench
7a = Vacuum/overpressure unit
15 = Adjustment throttle

16 = Adjusting screw
17 = Screw plug
18 = Pressure gauge

20 = Vacuum connection "retard"
22 = Overpressure connection "retard"

6.8.3 Testing the overpressure advance

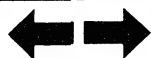
Connect the overpressure connection of the distributor test bench to the lower connection of the adjustment throttle. Connect the overpressure connection of the ignition distributor to the upper connection of the adjustment throttle. See connection diagram above.

Note: Adjusting screw (16) is for setting the pressure. If a pressure of 1.2 bar is not reached, then screw out the adjusting screw (16) and coat the thread with tough grease. Re-fit the adjusting screw (16). The screw plug (17) is open while testing.

E8

Testing

Ignition distributors 0 237..., ZV-H



E9

Testing

Ignition distributors 0 237..., ZV-H



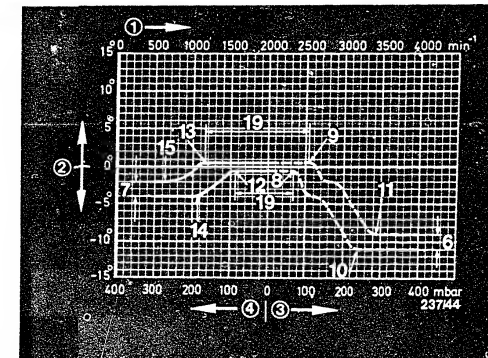
Further example of an advance curve, e.g. overpressure retard

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing overpressure, for there already to be a slight advance (max. 0.5°) although the actual overpressure advance only starts at point 8/9.

Note: The double unit with one connecting pipe advances when vacuum is applied to it and retards when overpressure is applied to it.

Switch off the voltage supply.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 4 = Gauge pressure
- 5 = Negative gauge pressure (vacuum) advance
- 7 = Gauge pressure retard
- 8/9, 12/13 =
Start of vacuum/overpressure advance with advance/retard
- 10/11, 14/15 =
End of vacuum/overpressure advance
- 19 = "Adjustment base"

E10

Testing

Ignition distributors 0 237..., ZV-H



E11

Testing

Ignition distributors 0 237..., ZV-H



With increasing overpressure, check whether the advance angle is within the stated tolerance range. See figure for example.

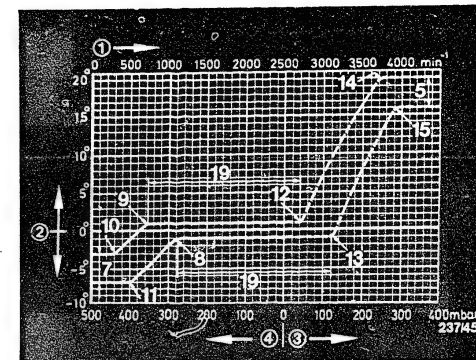
If an addition to the tolerance range of $\pm 0.5^\circ$ is given in the test specifications, the upper line must be extended by 0.5° to the top and the lower line by 0.5° to the bottom.

If the measured values are not within the tolerance range, check the breaker-plate assembly and tie rod for freedom of movement.

After reaching the end of advance, an increase in the overpressure must not result in any further advance.

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing overpressure, for there already to be a slight advance (max. 1.5°) although the actual overpressure advance only starts at point 12/13.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 4 = Gauge pressure
- 6 = Negative gauge pressure (vacuum) retard
- 7 = Gauge pressure retard
- 8/9, 12/13 = Start of vacuum/overpressure advance with double retard
- 10/11, 14/15 = End of vacuum/overpressure advance with double retard
- 19 = "Adjustment base"

E12

Testing

Ignition distributors 0 237...,ZV-H

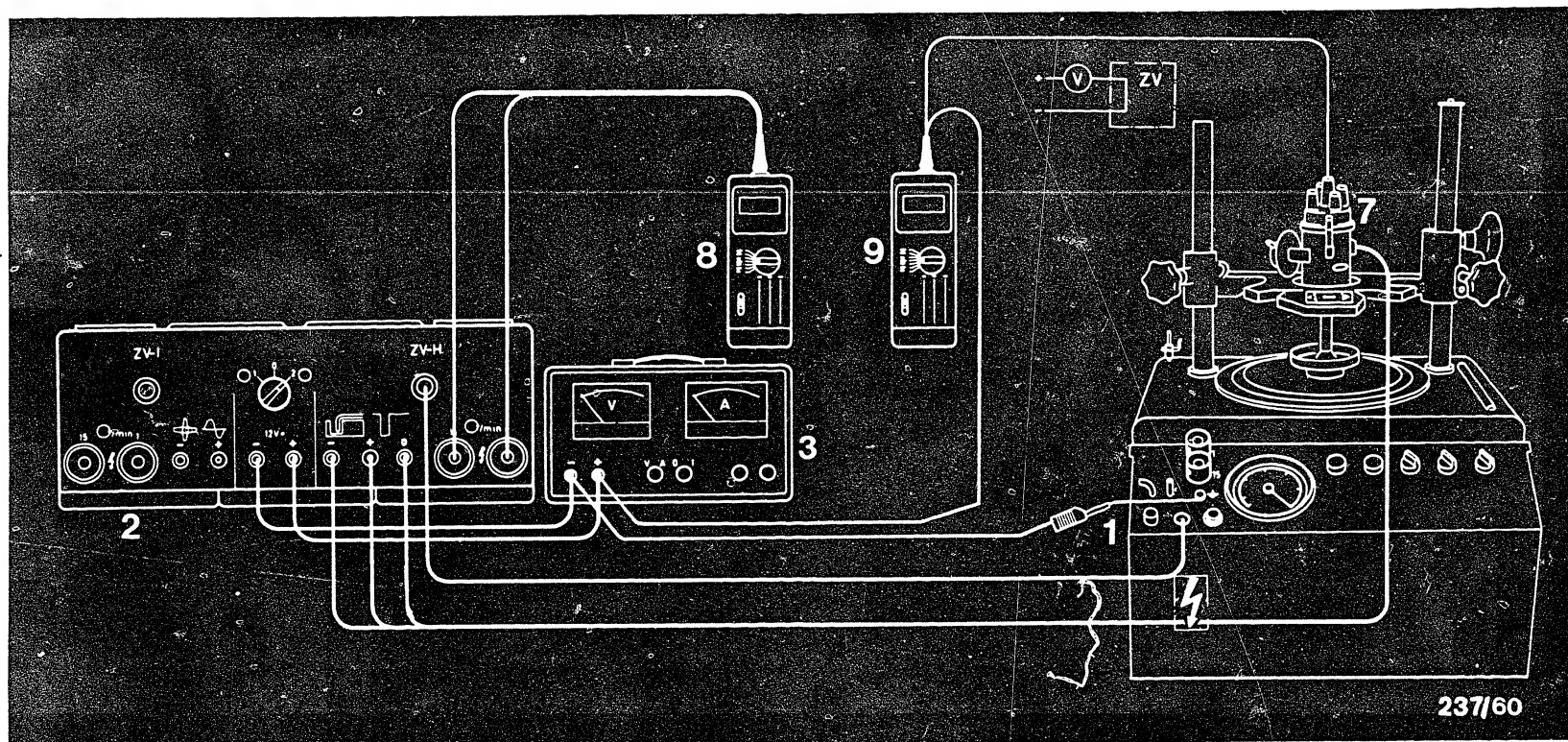


E13

Testing

Ignition distributors 0 237...,ZV-H





Terminal diagram

1 = Distributor test bench

2 = Distributor test adapter (ZV-H)

3 = Voltage stabilizer/battery

7 = Ignition distributor

8 = Tachometer

9 = Voltmeter

7. Testing the engine-speed limiter (test specifications VDT-W 237/1001)

Mount the ignition distributor and connect to testers in accordance with above terminal diagram. Follow the operating instructions of the individual testers.

Switch on the 12V voltage supply.

Drive the ignition distributor at the specified speed.

The engine-speed limiter is O.K. if, up to the specified minimum speed, the voltmeter does not indicate voltage and if, as of the specified max. speed, it indicates voltage.

Switch off the voltage supply.

E14

Testing

Ignition distributors 0 237...,ZV-H



E15

Testing

Ignition distributors 0 237...,ZV-H



8. List of test specifications with advance curves for
breakerless ignition distributors 0 237...65 mm hous.dia.

The part numbers of the ignition distributors are given in ascending order. They are followed by the number of the appropriate microfiche with the coordinate number.

Part number of distributor	FD	See microfiche W-237/	Coordinate
0 237 020 001		1001	D 24
002		1001	E 1
003		1001	E 2
004		1001	E 3
005		1001	E 4
006		1001	E 5
007		1001	E 6
008		1001	E 7
010		1001	E 8
011		1001	E 9
017		1001	E 10
020		1001	E 11
021		1001	E 12
025		1001	E 13
028		1001	E 14
029		1002	A 22
030		1001	E 15
031		1001	E 16
033		1001	E 17
034		1001	E 18
035		1001	E 19
037/038		1001	E 20
039		1001	E 21
040		1001	E 22
041		1001	E 23
042		1001	E 24



Part number of distributor	FD	See microfiche W-237/	Coordinate
0 237 020 043		1001	F 1
044		1001	F 2
045/046		1001	F 3
047		1001	F 4
048		1001	F 5
049		1001	F 6
050		1002	A 23
051/052		1001	F 7
055		1002	A 24
056		1002	B 1
058		1002	B 2
059		1002	B 3
061		1002	B 4
062/063	→242	1002	B 5
062/063	243→	1002	B 6
064		1002	B 7
065		1002	B 8
067/068		1002	B 9
069/070		1002	B 10
071/072		1002	B 11
073/074		1002	B 12
021 003/004		1001	F 8
005		1001	F 9
005/006	149→	1001	F 10
009		1001	F 11
010		1001	F 12
011		1002	B 13
012		1001	F 13
013		1001	F 14
014		1001	F 15
015		1001	F 16
022 007/008		1001	F 17
009/010		1001	F 18
013/014		1001	F 19
015/016		1001	F 20
017/018		1001	F 21



Part number of distributor	FD	See microfiche W-237/	Coordinate
0 237 022 019/020		1001	F 22
021/022		1001	F 23
023/024		1001	F 24
025/026		1002	B 14
027		1002	B 15
028/029	→245	1002	B 16
028/029	246→	1002	B 17
023 001/002		1001	G 1
005/006		1001	G 2
007/008		1002	B 18
009/010		1001	G 3
011/012		1001	G 4
013/014	→246	1002	B 19
013/014	247→	1002	B 20
024 003/004	→245	1002	B 21
003/004	246→	1002	B 22
005/006		1002	B 23
025 001/002		1001	G 5
003/004		1001	G 6
009/010		1001	G 7
011/012		1001	G 8
013/014		1001	G 9
015/016		1001	G 10
017/018		1001	G 11
021/022		1001	G 12
025/026		1002	B 24
027/028		1002	C 1
026 001/002		1001	G 13
004		1002	C 2
005		1002	C 3
006		1002	C 4
007		1002	C 5

H3

List of test specifications

Ignition distributors 0 237 ..., ZV-H



Part number of distributor	FD	See microfiche W-237/	Coordinates
0 237 027 001/002		1001	G 14
003/004		1001	G 15
005/006		1001	G 16
007/008		1001	G 17
009/010		1001	G 18
011/012		1001	G 19
013/014		1001	G 20
015/016		1001	G 21
017/018		1002	C 6
019/020		1002	C 7
021/022		1002	C 7
029 001		1002	C 8
030 001/002		1001	G 22
003/004		1002	C 9
031 001/002		1002	C 10
003/004		1002	C 11
005/006		1002	C 12
007/008		1002	C 13
034 001/002		1002	C 14
003/004		1002	C 15



Table of contentsCoordinates

Section

Microfiche layout	A 1
1. Test specifications	A 2
2. Test apparatus and tools necessary for repair	A 3
2.1 Test equipment and auxiliaries required for testing	A 3
3. Lubricants	A 4
3.1 Lubrication table	A 4
4. Repairing the pulse generator	B 1
4.1 Determining the size	B 1
4.2 Removing the pulse generator	B 2
4.3 Installing the pulse generator	B12
5. Repairing the pulse generator - <u>short-type ignition distributors</u>	C 1
5.1 Removing the pulse generator	C 1
5.2 Installing the pulse generator	C16
6. Testing	D 1
6.1 Test instructions	D 1
6.2 Visual examination	D 2
6.3 Preparations for testing	D 3
6.4 Testing the pulse generator system - magnetic pick-up assembly "ON"	D 4



Table of contentsCoordinates

6.5	Testing the pulse generator system -	
	magnetic pick-up assembly "OFF"	D 6
6.6	Testing the centrifugal advance	D 7
6.7	Testing the vacuum advance	D 13
6.7.1	Testing the vacuum unit for leaks	D 13
6.8	Testing the vacuum/overpressure advance - pressure unit with one or two connecting pipes	D 22
6.8.1	Testing the vacuum or overpressure unit for leaks	D 22
6.8.2	Testing the vacuum advance curve	E 1
6.8.3	Testing the overpressure advance	E 8
7.	Testing the engine-speed limiter	E 14

©1983 Robert Bosch GmbH

Automotive Equipment - After-Sales Service,
Department for Technical Publications KH/VDT,
Postfach 50, D-7000 Stuttgart 1

Published by: After-Sales Service, Department for
Training and Technology (KH)VSK). Press date: 3.1983.

Please direct questions and comments concerning the
contents to our authorized representative in your
country.

This publication is only for the use of the Bosch
After-Sales Service Organization, and may not be passed
on to third parties without our consent.

Microfilmed in the Federal Republic of Germany.
Microphotographié en République Fédérale d'Allemagne.

